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[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 93

[Docket No. 28770; Notice No. 96-15]

RIN 2120-AG34

Noise Limitations for Aircraft Operations in the Vicinity of  
Grand Canyon National Park

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

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**SUMMARY:** This notice of proposed rulemaking proposes to establish noise limitations for certain aircraft operated in the vicinity of Grand Canyon National Park. This notice is one part of an overall strategy to reduce further the impact of aircraft noise on the park environment and to assist the National Park Service in achieving its statutory mandate imposed by Pub. L. 100-91 to provide for the substantial restoration of natural quiet and experience in Grand Canyon National Park. To this end, this proposed rule is issued concurrently with a final rule affecting the Special Flight Rules in the Vicinity of Grand Canyon National Park, a Notice of Availability of Proposed Commercial Air Tour Routes for the Grand Canyon National Park and Request for Comments, and the Draft Environmental Assessment for this Notice. As mentioned above, this NPRM is issued concurrently with a final rule published elsewhere in this part of this

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PART IV

issue of the Federal Register. Based on Notice No. 96-11, the final rule adds a new subpart to part 93 to codify and revise the provisions of Special Federal Aviation Regulation (SFAR) No. 50-2, Special Flight Rules in the Vicinity of Grand Canyon National Park.

**DATES:** Comments must be received on or before ~~[Insert date 90 days after date of publication in the Federal Register]~~ **MAR 31 1997**.

**ADDRESSES:** Comments on this NPRM should be mailed, in triplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-200), Docket No. 28770, 800 Independence Avenue, SW., Washington, DC 20591. Comments may also be sent electronically to the Rules Docket by using the following Internet address: [nprmcmts@mail.faa.dot.gov](mailto:nprmcmts@mail.faa.dot.gov). Comments must be marked Docket No. 28770. Comments may be examined in the Rules Docket in Room 915G on weekdays between 8:30 a.m. and 5:00 p.m., except on Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Mr. Thomas L. Connor, Mgr, Technology Division, AEE-100, Office of Environment and Energy, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC, 20591; Telephone: (202) 267-8933. For the draft Environmental Assessment contact Mr. William J. Marx, Division Manager, ATA-300, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC, 20591; Telephone: 202-267-3075.

**SUPPLEMENTARY INFORMATION:**

**Comments Invited**

Interested persons are invited to participate in this proposed rulemaking by submitting such written data, views, or arguments as they may desire. Comments relating to the environmental, energy, federalism, or economic impact that may result from adopting the proposals in this notice are also invited. Comments that provide the factual basis supporting the views and suggestions presented are particularly helpful in developing reasoned regulatory decisions. Communications should identify the regulatory docket number and be submitted in triplicate to the above specified address. All communications and a report summarizing any substantive public contact with FAA personnel on this rulemaking will be filed in the docket. The docket is available for public inspection both before and after the closing date for receiving comments.

Before taking any final action on this proposal, the Administrator will consider all comments made on or before the closing date for comments, and the proposal may be changed in light of the comments received.

The FAA will acknowledge receipt of a comment if the commenter includes a self-addressed, stamped postcard with the comment. The postcard should be marked "Comments to No. 28770." When the comment is received by the FAA, the postcard will be dated, time stamped, and returned to the commenter.

#### **Availability of the NPRM**

Any person may obtain a copy of this NPRM by submitting a request to the Federal Aviation Administration, Office of Rulemaking, 800 Independence Avenue SW., Washington, DC, 20591, or by calling (202) 267-9677. Communications must identify the notice number of this NPRM. Persons interested in being placed on a mailing list for future FAA NPRM's should request a copy of Advisory Circular No. 11-2A, Notice of Proposed Rulemaking Distribution System, which describes application procedures.

An electronic copy of this document may be downloaded using a modem and suitable communications software from the FAA regulations section of the Fedworld electronic bulletin board service (telephone: 703-321-3339) or the Federal Register's electronic bulletin board service (telephone: 202-512-1661). Internet users may reach the FAA's web page at <http://www.faa.gov> or the Federal Register's webpage at [http://www.access.gpo.gov/su\\_docs](http://www.access.gpo.gov/su_docs) for access to recently published rulemaking documents.

## **History**

Beginning in the summer of 1986, the FAA initiated regulatory action to address increasing air traffic over Grand Canyon National Park (GCNP). On March 26, 1987, the FAA issued Special Federal Aviation Regulation (SFAR) No. 50 (subsequently amended on June 15, 1987; 52 FR 22734) establishing flight regulations in the vicinity of the Grand Canyon. The purpose of the SFAR was to reduce the risk of

midair collision, reduce the risk of terrain contact accidents below the rim level, and reduce the impact of aircraft noise on the park environment.

In 1987, Congress enacted Pub. L. 100-91, commonly known as the National Parks Overflights Act. The Act stated, in part, that noise associated with aircraft overflights at GCNP was causing "a significant adverse effect on the natural quiet and experience of the park and current aircraft operations at the Grand Canyon National Park have raised serious concerns regarding public safety, including concerns regarding the safety of park users."

Section 3 of Pub. L. 100-91 required the Department of the Interior (DOI) to submit to the FAA recommendations to protect resources in the Grand Canyon from adverse impacts associated with aircraft overflights. The law mandated that the recommendations: (1) provide for substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflight; (2) with limited exceptions, prohibit the flight of aircraft below the rim of the canyon; and (3) designate flight-free zones except for purposes of administration and emergency operations.

In December 1987, the DOI transmitted its "Grand Canyon Aircraft Management Recommendation" to the FAA, which included both rulemaking and nonrulemaking actions. Pub. L. 100-91 required the FAA to prepare and issue a final plan for the management of air traffic above the Grand Canyon,

implementing the recommendations of the DOI without change unless the FAA determined that executing the recommendations would adversely affect aviation safety. After the FAA determined that some of the DOI recommendations would adversely affect aviation safety, the recommendations were modified to resolve those concerns.

On May 27, 1988, the FAA issued SFAR No. 50-2 revising the procedures for operation of aircraft in the airspace above the Grand Canyon (53 FR 20264, June 2, 1988). SFAR No. 50-2 established a Special Flight Rules Area (SFRA) from the surface to 14,499 feet above mean sea level (MSL) in the area of the Grand Canyon. The SFAR prohibited flight below a certain altitude in each of five sectors of this area, with certain exceptions. The SFAR established four flight-free zones from the surface to 14,499 feet MSL above large areas of the park. The SFAR provided for special routes for commercial sightseeing operators, which are required to conduct operations under part 135, as authorized by special operations specifications. Finally, the SFAR contained certain terrain avoidance and communications requirements for flights in the area.

A second major provision of section 3 of Pub. L. 100-91 required the DOI to submit a report to Congress "... discussing ... whether [SFAR No. 50-2] has succeeded in substantially restoring the natural quiet in the park; and ... such other matters, including possible revisions in the plan, as may be of interest." The report was to include

comments by the FAA "regarding the effect of the plan's implementation on aircraft safety." The Act mandated a number of studies related to the effect of overflights on parks. The National Park Service (NPS) took longer than originally anticipated to complete the studies because many of the issues involved are on the cutting edge of technical and scientific capability. According to the NPS, measuring natural quiet is different from measuring levels of aircraft noise. On June 15, 1992, the FAA promulgated a final rule to extend the expiration date of SFAR No. 50-2 to June 15, 1995, while the NPS studies and analyses were being conducted (57 FR 26764).

On September 12, 1994, the DOI submitted its final report and recommendations to Congress. This report, entitled, "Report on Effects of Aircraft Overflights on the National Park System," was published in July 1995. The Report recommended numerous revisions to SFAR No. 50-2 that are described below. The NPS Report was based on more than 20 separate studies. These studies included acoustical measurements from GCNP sites, GCNP visitor surveys, noise dose-visitor response analyses, and noise modeling of commercial sightseeing aircraft overflying GCNP using FAA survey data.

The Report concluded that the SFAR had not fully resulted in the substantial restoration of natural quiet in the Grand Canyon, despite the improvements it brought. Further, as of 1994, only about 34 percent of the park could

be said to experience a substantial restoration of natural quiet, and that this would drop to little more than 10 percent by the year 2000 if growth continued at the same level as predicted. Only when the NPS made larger flight-free zones and, more importantly, substituted quieter aircraft into the scenario modeled for 2010, was achievement of a substantial restoration possible. The NPS Report to Congress clearly states that reducing noise at the source, as in the use of quieter aircraft, is the most important ingredient in achieving the substantial restoration of natural quiet in the Grand Canyon.

On June 15, 1995, the FAA published a final rule that extended the provisions of SFAR No. 50-2 to June 15, 1997 (60 FR 31608). This action allowed the FAA sufficient time to review the NPS recommendations and to initiate and complete any appropriate rulemaking action.

President Clinton, on April 22, 1996, issued a Memorandum for the Heads of Executive Departments and Agencies to address the significant impacts on visitor experience in national parks. Specifically, the President directed the Secretary of Transportation to issue proposed regulations for the Grand Canyon National Park placing appropriate limits on sightseeing aircraft to reduce the noise immediately and make further substantial progress toward restoration of natural quiet, as defined by the Secretary of the Interior, while maintaining aviation safety in accordance with Pub. L. 100-91.



In response to the President's directive, on July 31, 1996 (61 FR 40120; Notice No. 96-11), the FAA published an NPRM to reduce the impact of aircraft noise on Grand Canyon National Park (GCNP) and to assist the NPS in achieving its statutory mandate imposed by Pub. L. 100-91 to provide for the substantial restoration of natural quiet and experience in GCNP. The NPRM proposed and requested comments on the following: (1) Modification of the dimensions of the GCNP SFRA; (2) Establishment of new flight-free zones and flight corridors, as well as modification of existing flight-free zones and flight corridors; (3) Proposed flight-free periods and/or an interim moratorium on additional commercial sightseeing air tours and tour operators; and (4) Establishment of reporting requirements for commercial sightseeing companies operating in the SFRA. In addition to these areas, the FAA sought comment on a number of questions and alternatives regarding curfews and caps on the number of aircraft and operations, as well as on the issue of quiet aircraft technology. The comment period for the proposed rule, originally set for 60 days, was subsequently extended for another 45 days as directed by the Congress in the Federal Aviation Authorization Act of 1996 (61 FR 54716; October 21, 1996). In addition several commenters requested additional time to analyze the complex components of the proposed rule.

On September 16-20, 1996, in Scottsdale, AZ, and Las Vegas, NV, the FAA held public meetings to obtain additional

comment on the NPRM and on the draft environmental assessment. Comments and the transcripts of these meetings have been placed in the rulemaking docket for Notice No. 96-11.

The FAA received approximately 14,000 comments in response to the NPRM and the public meetings. The FAA has developed a final rule, based on Notice No. 96-11 and on the public comments to the notice, that is being issued concurrently with this NPRM published elsewhere in this part of this issue of the Federal Register.)

#### **Interagency Working Group**

On December 22, 1993, Secretary of Transportation Federico Peña and Secretary of the Interior Bruce Babbitt formed an interagency working group (IWG) to explore ways to limit or reduce the impacts from overflights on national parks, including GCNP. Secretary Babbitt and Secretary Peña concur that increased flight operations at GCNP and other national parks have significantly diminished the national park experience for some park visitors, and that measures can and should be taken to preserve a quality park experience for visitors, while providing access to the airspace over national parks. The Secretaries see the formation of the working group and the mutual commitment to addressing the impacts of park overflights as the initial steps in a new spirit of cooperation between the two departments to promote an effective balance of missions.

The FAA has been working closely with the NPS to identify and deal with the impacts of aviation on parks, and the two agencies will continue to identify and pursue the most effective solutions. This close cooperation is necessary because the FAA has sole authority for control of the nation's airspace to ensure aviation safety and efficiency, while the NPS is charged with managing the natural and cultural resources in the national park system and providing for public enjoyment of those resources in such a manner that they are unimpaired for the enjoyment of future generations.

The FAA's role in the IWG has been to promote, develop, and foster aviation safety, and to provide for the safe and efficient use of airspace, while recognizing the need to preserve, protect, and enhance the environment by minimizing the adverse effects of aviation on the environment. The NPS' role in the IWG has been to protect public land resources in national parks, preserve environmental values of those areas, and provide for public enjoyment of those areas.

In March 1994, the two agencies jointly issued an advance notice of proposed rulemaking (ANPRM) seeking public comment on policy recommendations addressing the effects of aircraft overflights on national parks, including GCNP (59 FR 12740; March 17, 1994). The recommendations presented for comment included voluntary measures, altitude restrictions, flight-free periods, flight-free zones,

allocation of noise equivalencies, and incentives to encourage use of quiet aircraft technology. On the issue of possible incentives for quiet aircraft technology, the ANPRM stated:

"Air tour operators could be encouraged to use relatively quiet aircraft on park overflights. For example, a flight corridor with a good scenic view of the canyon could be limited to aircraft meeting certain noise emission standards. An air tour operator could find it advantageous to convert its entire fleet to such quiet aircraft to incorporate that corridor in its tours. While there is no Federal requirement for aircraft to be manufactured to produce less noise than Stage 3 standards, some aircraft appropriate for air tour operations are quieter than Stage 3. Increased use of such aircraft in air tours would achieve noise mitigation through reducing noise levels on the surface of the park, although this option does not address issues other than noise."

In response to the ANPRM, the FAA received 30,726 comments, including duplicate form letters and several petitions with multiple signatures; the FAA received 24,510 submissions of one form letter with comments addressing the GCNP. Of the total number of comments, 1,975 were distinct letters. This NPRM will discuss only those comments that relate to establishing aircraft noise limitations at GCNP. The remainder of the comments relating to the above noted recommendations may be addressed in a later rulemaking.

Of the 644 comments that specifically addressed GCNP, 337 commenters opposed, while 232 commenters supported, further regulation. Commenters included members of State and local governments; congresspersons; helicopter operators; Native Americans and other individuals; and

aviation, environmental, and recreational organizations and associations.

A number of commenters addressed the issue of quiet aircraft technology. Commenters opposing additional regulation of aircraft noise levels argued that quieter aircraft are expensive and incentives to invest in this technology are needed. Alternatively, commenters said that noise budgets are too complex and will not work. Commenters supporting additional regulation urged that incentives to minimize noise per passenger should be established or that an aircraft noise budget should be created. Specifically, a few commenters supported the unconditional adoption of quiet aircraft technology. One commenter suggested dividing aircraft into noise producing classes, with the higher noise class airplanes facing greater restrictions. Other commenters suggested requiring mufflers for all aircraft. The majority of the comments received on this issue, however, raise concerns with the adoption of noise-reduction technology. Many commenters stated that the cost of quiet plane technology is prohibitive at this time. Some commenters suggested adopting noise abatement equipment as it becomes affordable. Other commenters suggested using financial incentives -- such as tax incentives, fee abatements, loan programs, and increased allocation on the number of flights allowed -- to encourage operators to use quiet aircraft. One commenter stated that quiet aircraft technology is not an adequate solution for the overflight

problem because such aircraft retain impacts and risks other than noise. Another commenter argued that exploring quiet aircraft technology at this time is not a worthwhile endeavor because technology will not be able to address the noise problem in the near future. Another commenter stated that, as an example for commercial operators, those agencies conducting airflights over Noise Sensitive Areas should be required to integrate quieter aircraft into their fleets.

Since the issuance of the joint ANPRM and the formation of the IWG, the FAA and NPS have been working closely to identify and deal with the impacts of aviation on GCNP, and the two agencies will continue to identify and pursue effective solutions. In this spirit of cooperation, the agencies plan to take the following nonregulatory and regulatory actions to achieve the substantial restoration of natural quiet in GCNP.

In addition to the rulemakings concerning GCNP, the IWG is working to develop a nationwide strategy for addressing noise for the national park system, and the FAA will be issuing a rule for limiting noise at Rocky Mountain National Park.

#### **Public Meetings**

The FAA has held several public meetings in an effort to obtain public input for the development of additional actions to reduce the impact of aircraft noise on GCNP and

assist the NPS in its efforts to restore natural quiet and experience in the park.

On June 28, 1995, the FAA and the NPS jointly published a notice announcing a public meeting to provide the interested parties with an opportunity to comment on improving SFAR No. 50-2 (60 FR 33452). The meeting, held on August 30, 1995, in Flagstaff, AZ, yielded 62 speakers representing air tour operators, environmentalists, government, tourist boards, corporations, Native American tribes, and other individuals. An additional 349 public comments were subsequently received during the comment period that ended on September 8, 1995.

On September 16-20, 1996, in Scottsdale, AZ, and Las Vegas, NV, the FAA held public meetings to obtain additional comment on the NPRM and on the Draft Environmental Assessment for the final rule that is published elsewhere in this issue of the Federal Register. Comments and the transcripts of these meetings have been placed in the rulemaking docket for that final rule.

### **Congressional Hearings**

On October 10-11, 1996, Congressional hearings were held by the Aviation Subcommittee of the Senate Committee on Commerce, Science, and Transportation at Las Vegas, Nevada, and Tempe, Arizona. The hearings were held to gather

testimony from various entities involved in or affected by the FAA's proposed special flight rules over the Grand Canyon (Notice No. 96-11). Senator John McCain of Arizona made opening statements at both field hearings indicating that they were there to examine the impacts of the proposed rules and the Draft Environmental Assessment. He hoped the FAA would provide appropriate incentives for quiet air technology in the final rule.

The Nevada Congressional delegation (Senator Bryan and Congressman Ensign in person, Senator Reid and Congresswoman Vucanovich by proxy) indicated, at the Las Vegas hearing, their opposition to Notice No. 96-11 as written, noting safety concerns as well as ones related to economics, NEPA compliance, and the lack of quiet air technology incentives.

The issues raised by Senator McCain and other members of the Arizona delegation were also addressed by others testifying at the field hearings. There were points (and often counterpoints) raised as to the effectiveness of SFAR 50-2 in substantially restoring natural quiet in the Grand Canyon, as mandated by Pub. L. 100-91; the NPS's definition of substantial restoration (50% or more of the park quiet at least 75% of the time); methodology involved in measuring and modeling noise impacts; potential impacts of the new rule on safety in the SFRA; effects of the new rule on general aviation; potential adverse impacts of the rule on



the economy of Las Vegas and Nevada; the adequacy of the consultation process with Native American tribes; and controls on other uses of the park vis-a-vis air tour overflights.

Many of the air tour operators, some of whom had also voiced concerns about the safety implications of Notice No. 96-11, predicted dire economic consequences for the industry if the NPRM, which included possible caps on operations, curfews, and two additional flight-free zones, went into effect. In response to the operators' economic worries, Senator McCain reminded them that they had unanimously opposed his bill, which became Pub. L. 100-91, in 1987, claiming that it would put the entire industry out of business. Instead, he noted, the number of air tour overflights of Grand Canyon had increased from approximately 40,000 per annum in 1987 to the 95,000 reported by the Arizona Republic newspaper for the 12-month period which ended September 30, 1996.

Aside from a commitment to air safety, perhaps the only issue on which all of the interests represented at the field hearings appeared to agree was the need for quiet air technology incentives for both manufacturers and air tour operators. From Senator McCain and members of the Nevada Congressional delegation to the Native American tribal leaders and from environmental groups to air tour operators

and aircraft manufacturers, as well as aviation and tourism industry representatives, quieter air technology incentives were viewed as integral to efforts to substantially restore natural quiet to the Grand Canyon while maintaining a viable air tour industry. Among specific suggestions made were providing more attractive routes to quieter aircraft, setting aside a portion of air tour overflight fees to provide loans to air tour operators to invest in further quiet air technology, and lowering fees for those operators using quieter aircraft.

The FAA has considered the statements made at the hearings in developing this proposed rule.

#### **Consultation with Affected Native American Tribes**

Three Native American reservations border GCNP, and several additional tribes have cultural ties to the Grand Canyon. The DOT and DOI recognize that before taking any action, they have an obligation to consult with these tribes on a government-to-government basis. The consultation process, begun with the development of the proposed and final rule for the reduction of aircraft noise on GCNP, will continue with this process. This will include a continuing dialogue with tribes potentially affected by this proposal and will include direct meetings as well as written consultation. Initial steps have been taken to contact

potentially affected tribes of this proposal based on the government-to-government relationships.

#### **Relationship to Final Rule Published Concurrently**

As mentioned above, the FAA has developed a final rule, based on Notice No. 96-11 and on the public comments to the notice, that is being issued concurrently with this NPRM as published elsewhere in this part of this issue of the Federal Register.

Notice No. 96-11 proposed and requested comments on the following: (1) Modification of the dimensions of the GCNP Special Flight Rules Area (SFRA); (2) Establishment of new flight-free zones and flight corridors, as well as modification of existing flight-free zones and flight corridors; (3) Proposed flight-free periods and/or an interim moratorium on additional commercial sightseeing air tours and tour operators; and (4) Establishment of reporting requirements for commercial sightseeing companies operating in the SFRA. In addition to these areas, the FAA sought comment on a number of questions and alternatives regarding curfews and caps, as well as on the issue of quiet aircraft technology. The final rule for Notice No. 96-11 addresses all of these areas except for the issue of quiet aircraft technology. The FAA did not include requirements on quiet aircraft technology in the final rule, because

Notice 96-11 did not propose specific measures on that subject; instead the FAA requested comments and information that would allow the FAA to develop a specific proposal. Based on a review of the comments on quiet technology received on Notice No. 96-11, summarized below, the comments received at the FAA and Congressional public meetings, the comments received on the ANPRM published in 1994, and the NPS Report to Congress, the FAA is issuing this NPRM. Comments received to date on quiet technology will be considered in conjunction with comments submitted in response to this proposed rule.

#### Comments Concerning Quiet Technology

One commenter states that the largest operators at the Grand Canyon have either converted to quiet technology or are in the process of converting.

Papillon says that quieter aircraft is the solution to the problems raised in the NPRM and, in addition to describing the current technology available, recommends establishing a time frame for transition to quiet technology; establishing guidelines to qualify aircraft as quiet; and encouraging and assisting tour operators to convert their fleets to quiet technology aircraft.

Sierra Club - Grand Canyon Chapter says that the goal should be to completely phase in quiet technology aircraft

over the next 10 to 15 years, with no increase and even a decrease in the number of flights. This commenter says that new aircraft should not be louder than the aircraft they replace and that if a noise budget approach is developed, there should be a reduction factor.

The National Parks and Conservation Association (NPCA) asserts the necessity of incorporating quiet flight technology into the rule by noting that sound can travel 13 to 16 miles laterally from aircraft and penetrate deeply into flight-free areas.

A river tour company notes the use of the Thrush TurboPro for drug interdiction. This commenter believes that if the demand were created for "hush kits" on smaller aircraft via FAA rulemaking, manufacturers would develop and produce this type of technology at cheaper prices than are currently available.

Some commenters submitted technical information about quiet aircraft that are currently available or being developed. In addition, at the Congressional hearing, the National Aeronautics and Space Administration (NASA) submitted information on research and development efforts (by NASA and the FAA) on quiet aircraft technology for propeller-driven airplanes and rotorcraft. The FAA has considered this information in developing this proposed rule.

Some commenters, such as the Grand Canyon Air Tour Association (GCATA), Twin Otter, and Grand Canyon Airlines say that the proposed rules in Notice No. 96-11 will make it difficult for small operators to generate the revenue to invest in quieter aircraft. These commenters (some of whom have already employed quieter, more expensive aircraft) recommend that incentives such as tax credits, preferred routes and altitudes, elimination of overflight fees, and no curfews or caps, be made available to tour operators who wish to invest in quieter aircraft. Twin Otter and Grand Canyon Airlines add that the use of quieter and larger aircraft would be beneficial by reducing the number of air tour operations required to carry the same number of passengers, which would further reduce noise levels.

Twin Otter and Grand Canyon Airlines recommend withdrawing the NPRM and replacing it with incentives for quiet aircraft technology. Another commenter says that the FAA should not take a regulatory approach; rather, government should work with private enterprise to develop quieter aircraft.

Some commenters (e.g., Grand Canyon Trust, Wilderness Watch, Wilderness Society, Grand Canyon River Guides) state that a stronger rule is needed that would provide incentives for conversion of the existing tour fleet to the quietest aircraft available. Grand Canyon Airlines recommends that

interim milestones be set by which existing conventional air tour aircraft fleets are converted to quiet aircraft; these milestones could be similar in concept to those established in 14 CFR part 91 for air carrier compliance with 14 CFR part 36 for Stage 3 certification standards.

McDonnell Douglas Helicopter Systems (MDHS) supports offering economic incentives to encourage air tour operators to operate helicopters equipped with quiet technology. Since 1991, MDHS has provided many quiet technology "No Tail Rotor" (NOTAR) helicopters which are operating effectively in noise-sensitive environments. In addition to the types of incentives mentioned by other commenters (see above), MDHS recommends the use of airspace entry locations based on FAA noise certification data for each type of helicopter. MDHS also recommends that Federal government agencies operating within the national parks should set an example by acquiring and using quiet technology aircraft.

Another commenter suggests allowing those operators who own measurably quieter machinery a 5 percent credit on their allotted number of flight permits. According to the commenter, operators who persist in running noisy aircraft should be subject to penalties restricting their permits.

Another commenter suggests a fee per flight that would encourage the use of larger, quieter aircraft by multiplying that fee by the sound level. This commenter believes that

if this is used in conjunction with a limitation on the number of total tour flights permitted, operators would be encouraged to use quieter aircraft.

A BIA representative says that requirements for high-technology quiet aircraft should provide a specific exemption to Native American tribes for any flights sanctioned by such Native American tribes over their own lands.

The FAA agrees that the use of quieter aircraft will, in the long run, provide the most benefit toward restoring natural quiet. As discussed later in this preamble, this proposal contains a phase out schedule for noisier aircraft, a requirement that newly acquired aircraft meet certain acoustic criteria, and an incentive for using quieter aircraft by allowing flights through the proposed National Canyon route to be conducted with only the aircraft that meet this acoustic criteria. The FAA has considered the comments received on Notice No. 96-11 in developing the specific proposals described below.

The FAA and NPS are working together to develop a long-term Comprehensive Noise Management Plan that will address the best available technology, provision of appropriate incentives for investing in quieter aircraft, and appropriate treatment for operators that have already made such investments. As discussed below under "Potential



Further Action," the FAA and NPS solicit comments on the types of considerations that should be included in this plan. Both FAA and NPS are committed to the development of a noise management plan over the next 5 years.

### **The Proposal**

This proposed rule has several purposes. The first would be to provide an incentive for the use of quieter aircraft within GCNP. The second would be to establish additional noise limitations to reduce further the impact of aircraft noise on the park environment in the GCNP. The third would lift for the quietest aircraft the immediate temporary cap placed on the number of aircraft permitted to be used for commercial sightseeing operations in GCNP.

### **National Canyon Corridor**

The companion final rule published elsewhere in this part in this issue of the Federal Register expands the Toroweap/Shinumo Flight-free Zone to prohibit operations in the airspace area that is now used by operators for commercial sightseeing operations while flying from Las Vegas to Tusayan. This proposal would establish a corridor, referred to as the National Canyon Corridor, within the newly expanded Toroweap/Shinumo Flight-free Zone that would enable operators using GCNP Category C aircraft (the

quietest category of aircraft, as discussed below) to reinitiate commercial sightseeing operations along this route from Las Vegas to Tusayan without having to circumnavigate the Toroweap/Shinumo Flight-free Zone.

#### Phase-Out of Noisier Aircraft

In addition, the purpose of this proposal is to establish additional noise limitations to reduce further the impact of aircraft noise on the park environment in the Grand Canyon National Park. This proposal would accomplish this goal by a combination of requirements that would limit future use of noisier aircraft and that would provide incentives for the use of quieter aircraft. As discussed below, the proposed phase out of the GCNP Category A aircraft would provide a major reduction in noise by the end of the year 2000 and make a major contribution toward achieving the Congressional mandate of substantial restoration of natural quiet. Modeling shows that, if the phase out is adopted as proposed, the substantial restoration objective would be exceeded by 2008. The subsequent phase out of GCNP Category B aircraft would ensure continued restoration of natural quiet, as required by the NPS, even when projected numbers of additional GCNP Category C aircraft are added to the commercial sightseeing fleet.

The FAA has evaluated the noise exposure of existing aircraft used in the GCNP and has divided those aircraft into three categories based on noise per passenger or "noise efficiency": GCNP Category A aircraft includes the least noise efficient aircraft currently in use for sightseeing operations in the vicinity of the Grand Canyon National Park; GCNP Category B aircraft includes aircraft more noise efficient than Category A aircraft but less noise efficient than the quietest aircraft now available; and GCNP Category C aircraft includes affected aircraft which are the quietest currently available. A detailed discussion of the technological basis for these categorizations is in the following section of this preamble, entitled "Quiet Technology for GCNP."

This proposal would in effect prohibit any further acquisition of GCNP Category A aircraft for use in the SFRA by persons conducting sightseeing operations. Current operators with Category A aircraft could continue to use that number of GCNP Category A aircraft listed on the operator's operations specifications on December 31, 1996, but that use of GCNP Category A aircraft would have to end on or before December 31, 2000.

Current operators of GCNP Category B aircraft would be allowed to continue to use that number of aircraft listed on the operating specifications as of December 31, 1996, and on

or before December 31, 2000, as a replacement for GCNP Category A aircraft, but would be required to phase out all of those aircraft on or before December 31, 2008. The proposed phase out schedule would require that on or before December 31, 2002, at least one-quarter of the number of Category B aircraft listed on the operator's operations specifications on December 31, 2000, (the base level) would have to be phased out. The remaining Category B aircraft would have to be phased out in 25 percent increments so that no more than 50 percent of the base level aircraft would be in use after December 31, 2004, 25 percent after December 31, 2006, and all Category B aircraft would have to be phased out on or before December 31, 2008. During the period of time after the effective date of a final rule and on or before December 31, 2000, an operator could replace Category A aircraft with Category B or C aircraft but only on a one-for-one basis.

While the proposed rule would allow the continued use of Categories A and B aircraft by current certificate holders as described above, all aircraft used by new entrants to the affected sightseeing area would have to meet Category C requirements. This means that any person who wants to establish an aircraft sightseeing operation in the affected area after the effective date of a final rule would have to use only Category C aircraft. Also, all new aircraft

acquired by present operators above the total number of Category A and B aircraft listed on the operations specifications of each operator on December 31, 1996, would have to be Category C aircraft.

The FAA is soliciting comments on all aspects of the proposed phase-out plan, including the affected aircraft, the schedule and percentage of aircraft that would be affected by any such plan. Comments focusing on the economic and environmental impact of the proposed phase-out would be beneficial.

#### Comments on alternative proposal

Comments are particularly requested on a potential alternative to the proposal to allow an operator to replace Category A aircraft with either Category B or Category C aircraft. Under the alternative, Category A aircraft could only be replaced by Category C aircraft. No interim replacement by Category B would be permitted. Because this would hasten the elimination from the GCNP of all aircraft other than Category C, it is likely to achieve the goal of attaining natural quiet more rapidly than the primary proposal set forth in this notice. This alternative was not incorporated into the current proposal, however, because the FAA's preliminary analysis suggests that it could be significantly more costly to operators. (See the Appendix to the Regulatory Evaluation contained in the docket.)

These costs could be particularly burdensome to small entities.

However, if the additional costs of a direct transition from Category A to Category C are lower than they currently appear, and substantial additional environmental benefits may be obtained at reasonable cost, the final rule adopted in this proceeding could incorporate the alternative approach. Before taking final action, therefore, the FAA intends to further refine its cost estimates and the likely burden on small operators. Toward that end, it would be especially helpful if commenters provide specific cost and environmental projections that compare the impact of the primary proposal with the alternative. The FAA requests answers to the following questions, along with any other relevant information commenters wish to provide. Please note that comments accompanied by specific data about costs and/or environmental effects will be more useful than arguments of a general nature.

- From a business economic standpoint, would allowing the interim conversion of Category A aircraft to Category B be less burdensome than direct conversion to Category C?

- Does the cost of Category C aircraft exceed the cost of Category B aircraft? If so, by how much? What options other than direct purchase of Category C aircraft would be available that may have an effect on the economics of conversion?

- What is the availability of used Category C aircraft, and how could the acquisition of used aircraft mitigate the cost of the alternative?

- Are there business reasons that would cause operators to choose to replace Category A aircraft with Category C, even if Category C aircraft are more expensive than Category B aircraft? For example, would the subsequent need to phase out Category B make the option of an interim step undesirable in any event? Similarly, do Category C aircraft offer advantages in operating efficiency, marketability of air tours, repair costs, or other factors that would reduce the overall cost differences between acquiring Category B and Category C aircraft?

- Would other methods of analysis that include such factors as the cost of capital, long-term tax consequences, and other factors be more useful in determining the economic impacts of the conversion? If so, how should those factors be taken into account?

- What would be the noise-reduction consequences of requiring a direct transition from Category A to Category C? The replacement of Category A aircraft (by either Category B or Category C) is likely to make the greatest contribution toward the restoration of natural quiet. Insofar as quantification is possible, it would be useful to understand how much additional benefit could be obtained by going directly to Category C.

### Removal of Temporary Cap

Under the companion final rule published today, an immediate temporary cap is placed on the number of aircraft permitted to be used by each operator for commercial sightseeing operations in the Grand Canyon SFRA. If this notice is adopted as proposed, a cap on the total number of Category A and Category B aircraft permitted to operate in GCNP would remain in effect. However, the cap on Category C aircraft would be lifted. As a result, the fleet size of Category C aircraft could grow, subject to safety considerations, market-based considerations, or recommendations from the Comprehensive Noise Management Plan. For a more detailed discussion of this issue, see "Potential Further Action" below.

### **Quiet Technology for GCNP**

This section of the preamble is a summary of a technical paper describing the methodology for classifying noise characteristics for aircraft operating in GCNP. The full document has been placed in the docket for this rulemaking and is available for viewing and comment as described above under "ADDRESSES." To obtain a copy of this



document, contact the person listed under "FOR FURTHER INFORMATION CONTACT."

### *Introduction*

In response to comments in the docket for Notice No. 96-11 and those made at public hearings, FAA redoubled its efforts to develop concepts which would provide incentives for tour operators to invest in the best available noise abatement technology. Traditionally, the FAA uses its regulatory authority to impose more stringent national noise standards when it has been determined to be appropriate. By law when deciding on further noise stringency, FAA must ascertain whether the proposal is technologically feasible, economically reasonable, and appropriate to aircraft type. Based upon a joint FAA/NASA research report to Congress on quiet technology<sup>1</sup> and earlier work prepared for the third meeting of the Committee on Aviation Environmental Protection (CAEP) under the International Civil Aviation Organization (ICAO), the FAA determined that the imposition of new national and international noise standards for propeller-driven small airplanes and helicopters is not appropriate at this time. While there is ongoing research by the Federal government to identify future noise abatement technology, current aircraft designs already incorporate

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<sup>1</sup> Report of the FAA and NASA to the U.S. Congress Pursuant to Section 308 of the FAA Authorization Act of 1994, "Quiet Aircraft Technology for Propeller-driven Airplanes and Rotorcraft," June 1996.

most of the available technology within economic reasonableness. At GCNP, there are substantive differences in the noise characteristics of the air tour aircraft in use. Therefore, FAA looked to non-traditional concepts which could offer some incentive for tour operators to improve the GCNP situation.

#### *Noise Efficiency Concept*

One theme expressed by some commenters was that the use of quieter, larger aircraft would provide two-fold benefits in reducing noise of each operation and reducing the number of operations to carry the same number of passengers. This theme fits in nicely with the FAA's general policy of using cumulative aircraft noise as an appropriate measure of the potential impact as it accounts for both the number of flights and intensity of their noise. The FAA began to explore noise efficiency concepts as an incentive for operators to utilize aircraft equipped with the best available noise abatement technology in the park. The following attributes were used in judging potential concepts:

- Is based on aircraft noise certification (14 CFR part 36)
- Judges fixed- and rotary-wing aircraft on a common basis
- Correlates with aircraft performance and operation at GCNP

- Offers basis for incentives
- Is manageable

In addition to these attributes, the concept must be shown to be economically reasonable.

#### *Links to Aircraft Noise Certification*

Levels obtained from aircraft noise certification represent the highest quality of data available. The flight tests are conducted under controlled conditions with an FAA representative or designee in attendance to witness the test setup and test activities. Data obtained during these tests are corrected to standard reference conditions as prescribed in 14 CFR part 36. FAA publishes these levels in Advisory Circular 36-1, "Noise Levels for U.S. Certificated and Foreign Aircraft." The current version of this AC is 36-1F dated 6/5/92. Unfortunately there is no single method applicable to all aircraft for determining the certificated noise level. Depending on date of application for type certificate and whether the aircraft is a helicopter or airplane, the noise level could have been obtained from one of 4 different tests, Appendices F, G, H, and J of 14 CFR part 36.

Because these noise certification procedures contain differences in aircraft operation, measurement altitudes, and units of noise, it is not possible to directly compare Appendix F, G, H, and J noise levels. However, FAA has

developed a procedure for: (1) extrapolating from the controlled conditions of a certification test to the operating conditions at GCNP and (2) converting levels to a common noise unit, thus making it possible to judge fixed- and rotary-wing aircraft on a common basis under conditions that pertain to air tour operations over GCNP. Sound Exposure Level (SEL) was selected as the common noise unit. SEL is a basic building block in calculating Equivalent Sound Level ( $L_{eq}$ ) which is the measure of cumulative noise exposure that FAA is using to assess noise impacts in GCNP.  $L_{eq}$  is the most common method used to quantify time-varying noises. The Federal government uses a form of equivalent sound level, Day Night Sound Level (DNL), to quantify aircraft noise exposure in the vicinity of airports.

#### *Noise Efficiency Measure*

These extrapolation procedures for predicting noise levels applicable to Appendices F, H, and J of 14 CFR part 36 enable one to directly compare propeller-driven small airplanes and helicopters. There is no extrapolation procedure for Appendix G. The noise efficiency criterion for Appendix G noise levels was derived by a method that is explained later. In keeping with the theme of developing a noise efficiency concept, the extrapolated noise levels were examined as a function of the number of seats of the aircraft in the fleet of air tour aircraft operating at

GCNP. Since the principal business of these aircraft is to carry sightseers over the park, the number of passenger seats is a logical production (or efficiency) factor.

When the aircraft noise levels are plotted against the number of passengers, there appears to be a break or gap between groups of aircraft that support some NPS findings on "quiet aircraft." The NPS report to Congress identifies the DHC-6-300 Twin Otter ("Vistaliner" version), the Cessna Caravan I, and the McDonnell Douglas "No Tail Rotor" (NOTAR) helicopters as the quietest aircraft currently operating at GCNP. The report further states that NPS expects that these aircraft would qualify under a "quiet aircraft" category.

A line of demarcation can be drawn between the quietest aircraft and the rest of the air tour fleet. The two components of the line are: (1) horizontal until greater than 2 passenger seats, and (2) increasing slope at 3 dB per doubling of number of seats. The line is horizontal until the number of seats is greater than 2 because a review of aircraft specification data found that two is the least number of passenger seats found on an aircraft that had been operated as an air tour aircraft in GCNP. Specifying a limit that increases with the number of seats is consistent with FAA's philosophy of rewarding efficiency by allowing aircraft which carry more passengers to emit more noise, thus creating less noise per passenger. For example, the

slope of Appendix H noise limit increases at the rate of 3 decibels per doubling of weight. For aircraft in these weight ranges, 3 dB per doubling of number of seats is a comparable growth rate to 3 dB per doubling of weight. Figure 1 shows noise levels of many of the air tour aircraft against the number of passenger seats in the aircraft.

The area below the solid line in Figure 1 is proposed as the potential objective in the encouragement of compatible noise abatement technology for air tour operations in GCNP. This area is labeled "C" and the aircraft whose SELs fall within this region are "GCNP Category C aircraft." Another dotted line is plotted at 4 decibels above the solid line in Figure 1 which creates two new areas each covering 4 decibels and evenly splits the number of air tour aircraft into these two zones. The two new areas are labeled "A" and "B." Aircraft whose noise levels fall within these new zones are identified as GCNP Category A and GCNP Category B aircraft, respectively. An examination of a recent count of air tour aircraft finds that there are 57 GCNP Category A aircraft, 56 GCNP Category B, and 23 GCNP Category C aircraft operating at GCNP.

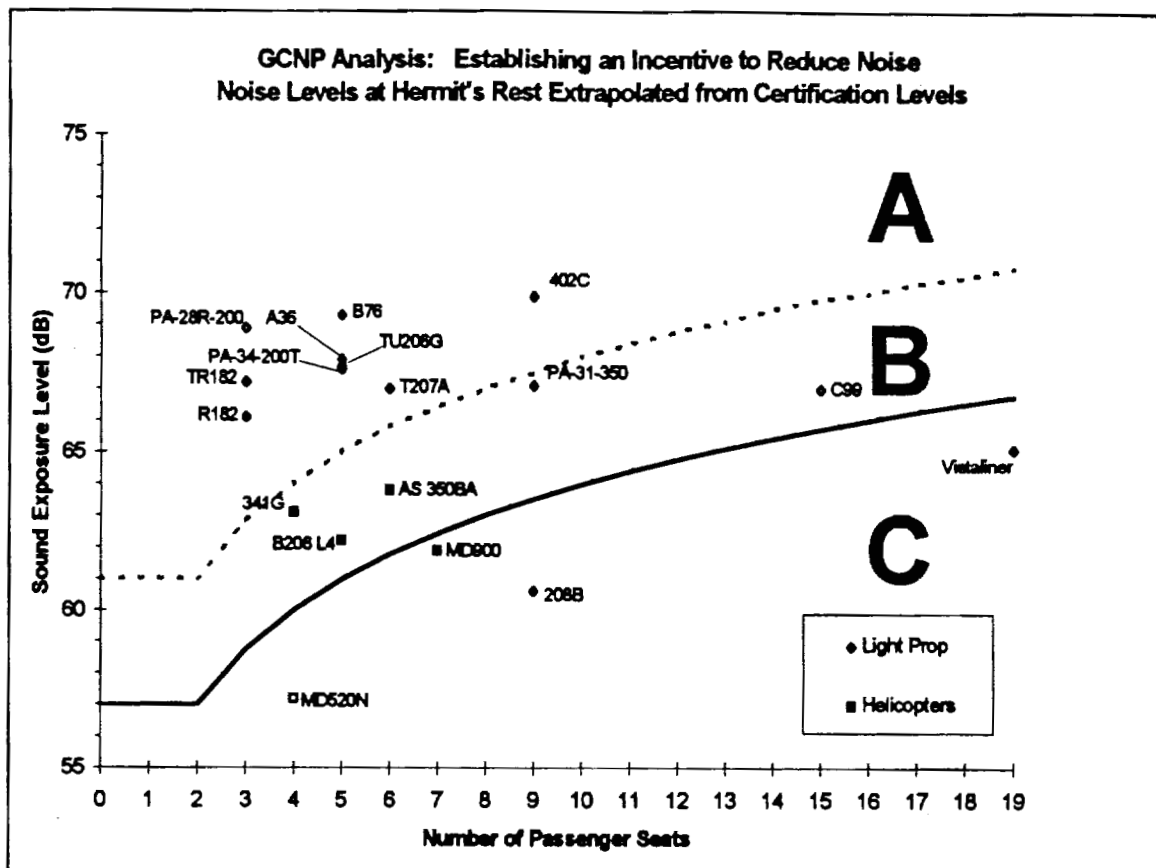


Figure 1

### Noise Efficiency Criteria

The curves in Figure 1 demonstrate the general concept and are the bases for the noise efficiency criteria. A workable criterion should be easy to apply and manage in the field and should be understandable to the operators and general public. The airport community has many years of experience using the certificated noise levels published in FAA's AC 36-1F. These data have been used to establish use restrictions, curfews, and noise budgets at some airports in the country. The certificated noise levels are not only available in advisory circulars which are updated and

published periodically but the levels are readily available to the aircraft owners from the aircraft flight manuals (AFM). Thus the development of noise efficiency criteria based on certificated noise levels is proposed not only because of the precedent, but it also eliminates the need for someone in the field to perform the mathematical extrapolation from certification to GCNP conditions by the method that was outlined in the section "Links to Aircraft Noise Certification."

By reversing the process that determined the noise levels in Figure 1, the two lines in Figure 1 are translated into three GCNP noise efficiency criteria for Appendices F, H, and J. These are shown in Figures 2a, 2b, and 2c, respectively. The figures also contain the equations for the GCNP Categories B and C noise efficiency criteria or noise limits. These are the criteria for compliance with the proposed regulation.

As stated earlier, this study did not discover a method to successfully extrapolate Appendix G noise levels to GCNP conditions. When FAA promulgated Appendix G to supersede Appendix F, the change was to replace the level flyover test with a takeoff test. The Appendix G noise limit is 5 decibels higher than the Appendix F noise limit to account for difference in measured noise levels obtained under the different test conditions. Applying that philosophy to this



...tuation, a noise efficiency criterion for Appendix G noise levels can be derived by adding 5 decibels to the criteria for Appendix F. There is no figure in this paper, similar to Figures 2a-c, showing the Appendix G noise efficiency criteria because all of the propeller-driven airplanes currently operating at GCNP predate the promulgation of Appendix G of 14 CFR part 36. The equations of the noise efficiency criteria for Appendix G are found in Appendix B of the proposed rule.

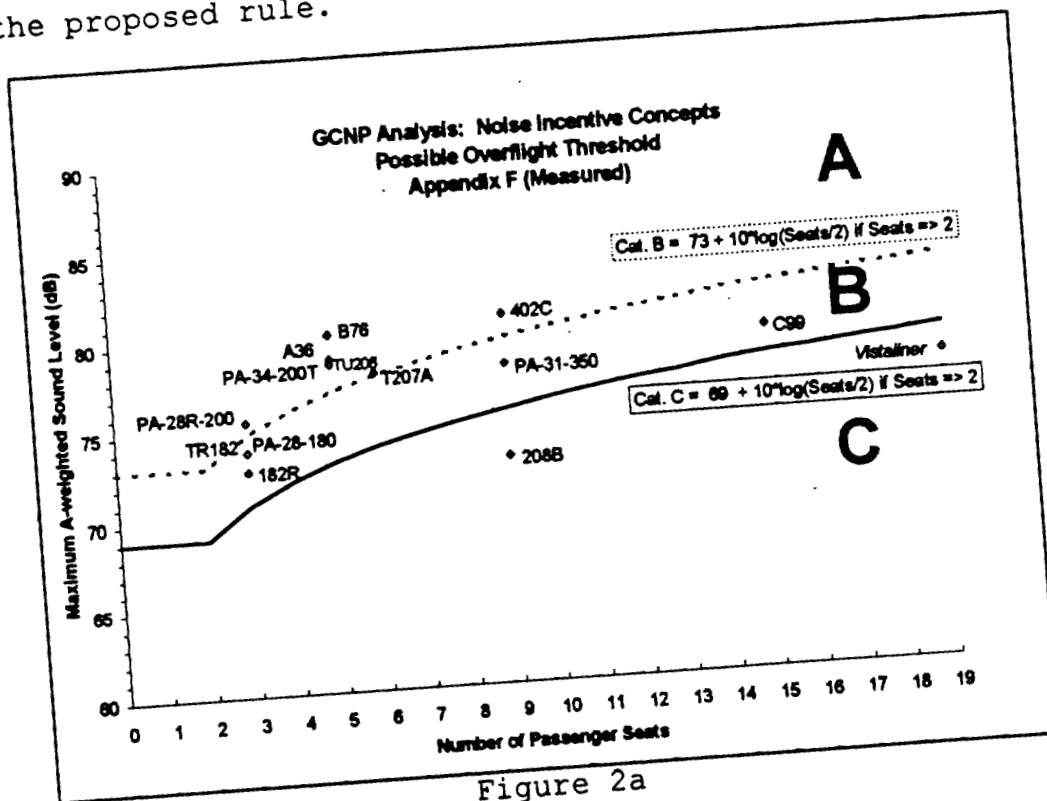


Figure 2a

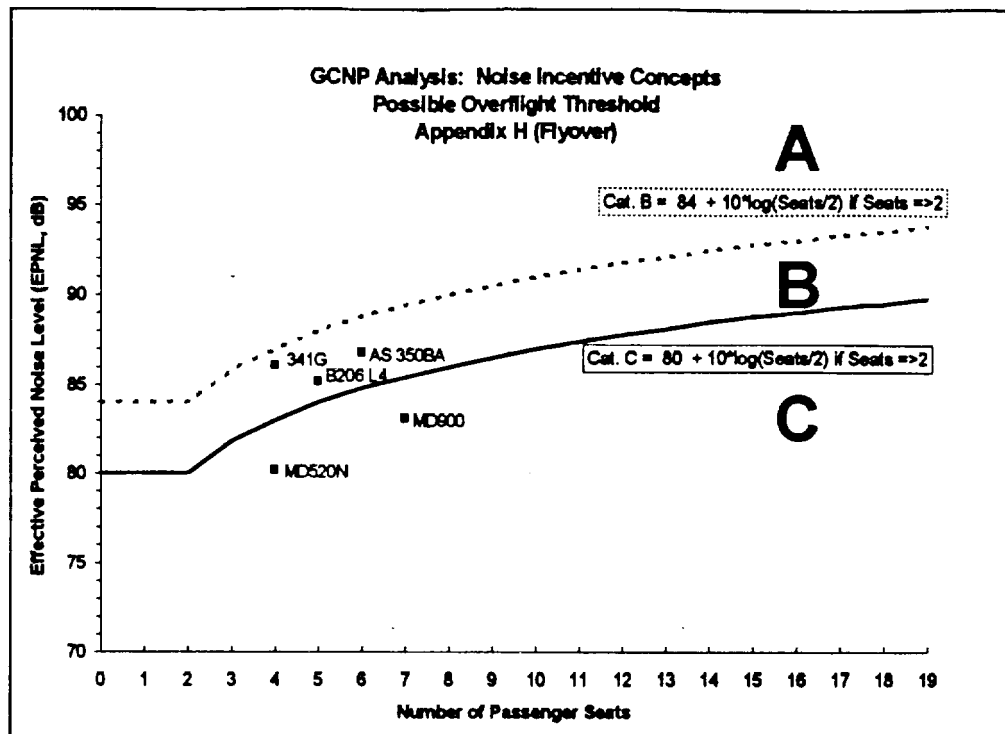


Figure 2b

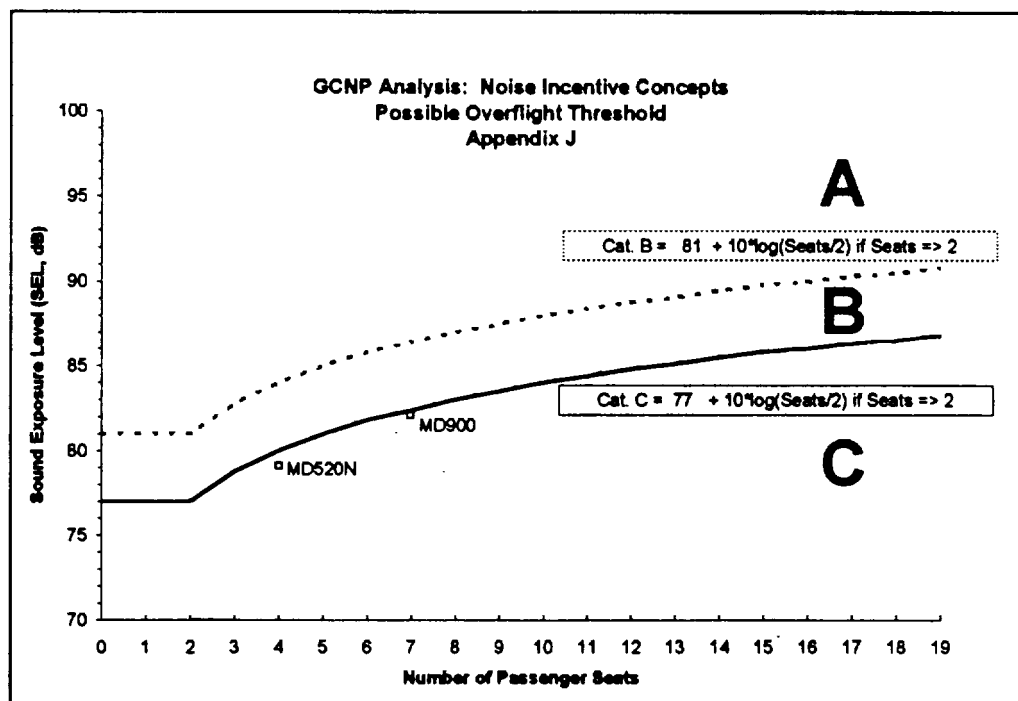


Figure 2c

## *Implementation*

The proposed GCNP aircraft noise incentive concept links to the aircraft noise certification provisions prescribed in 14 CFR part 36. The incentive criteria will be based upon the noise levels obtained under noise certification conditions. The use of noise certification levels will provide an ability to judge fixed- and rotary-wing aircraft on a common basis.

New aircraft are subject to the provisions of 14 CFR part 36 including the requirement to conduct a noise certification test under controlled conditions. This test is conducted in accordance with an FAA approved test plan and is typically witnessed by FAA personnel unless delegated to an FAA designee. Some aircraft, depending on the date of type certification, were not subject to the noise certification provisions of 14 CFR part 36. Thus noise certification levels are unknown. In the strict sense certification noise tests should be required to establish noise levels for comparative purposes against the GCNP aircraft noise efficiency criteria.

The FAA does not have the authority to mandate that those older aircraft conduct such tests for compliance with the provisions of 14 CFR part 36. However, in order to fully implement the GCNP aircraft noise incentive concept,

noise certification levels or estimates of those levels under certification conditions will be required.

Considering the overall cost associated with conducting noise certification tests and establishing noise certification levels it is proposed to offer a hierarchy of noise level data source options for establishing noise levels to fully implement the GCNP aircraft noise incentive concept. FAA plans to publish an Advisory Circular (AC 36-XX) that will facilitate the determination of the noise levels for the GCNP noise efficiency criteria. This AC would list all aircraft operating at Grand Canyon National Park as determined from operations specifications. Noise levels would be specified for each aircraft listed in the AC.

In some cases the noise levels listed in this proposed AC would be the actual FAA approved noise certification levels documented in the FAA approved airplane or rotorcraft flight manuals. These levels are typically provided in FAA AC 36-1 and would simply be referenced in the proposed GCNP AC. In other cases where noise certification under 14 CFR part 36 was not required, the noise level could be provided to the FAA by the operator or owner following the hierarchy described below. The owner or operator would have to substantiate to the FAA that the estimated noise level is representative for the subject aircraft.

The following hierarchy of noise level data sources would be documented in the proposed AC and used for all aircraft in determining the noise level for the GCNP aircraft noise incentive concept:

1. US certifications under 14 CFR part 36 with noise certification levels obtained from the FAA approved flight manuals or FAA AC 36-1.
  - a) For propeller driven small airplanes the applicable hierarchy of regulations are:
    - 1) 14 CFR part 36 Appendix F
    - 2) 14 CFR part 36 Appendix G
  - b) For helicopters the applicable hierarchy of regulations are:
    - 1) 14 CFR part 36 Appendix J
    - 2) 14 CFR part 36 Appendix H
2. Foreign certifications under ICAO Annex 16, Volume I with noise certification levels obtained from the approved flight manuals or data approved by the foreign civil aviation authorities, or FAA AC 36-1.
  - a) For propeller driven small airplanes the applicable hierarchy of regulations are:
    - 1) ICAO Annex 16, Volume I Chapter 6
    - 2) ICAO Annex 16, Volume I Chapter 10
  - b) For helicopters the applicable hierarchy of regulations are:

- 1) ICAO Annex 16, Volume I Chapter 11
- 2) ICAO Annex 16, Volume I Chapter 8
3. Research or other measurement test data obtained under controlled conditions, documented and corrected to the certification conditions of Appendix F for small propeller driven airplanes and Appendix J for helicopters. Preference would be placed on those data obtained under certification-like conditions and/or those data collected under an FAA sponsored noise research test.
4. FAA approved noise estimation methods that can estimate Appendix F noise levels for small propeller driven airplanes and Appendix J noise levels for helicopters. Currently the following methods may be suitable for use pending FAA approval on a case by case basis.
  - a) For propeller driven small airplanes: Method in Section 2.2 of DOT/FAA/AEE-82-1
  - b) For helicopters: SAE/AIR 1989

As one moves down on the hierarchy the expected level of substantiation (as the representative noise certification level-estimated) by the operator or owner would increase, and the level of FAA scrutiny should be expected to increase.

The resulting noise levels will vary depending upon an operator's or owner's situation related to the above

hierarchy. In the case of helicopters the noise levels will be the flyover noise certification level in the noise metric of Effective Perceived Noise Level (EPNL) (14 CFR part 36, Appendix H) or Sound Exposure Level (SEL) (14 CFR part 36, Appendix J). In the case of small propeller-driven airplanes the noise levels will be the flyover (14 CFR part 36, Appendix F) or takeoff (14 CFR part 36, Appendix G) noise certification level in the noise metric of maximum A-weighted sound level. It is estimated that noise levels for virtually all aircraft currently operating in GCNP could be achieved without the need for a complete noise certification test.

All estimated noise certification levels provided in the proposed FAA AC 36-XX would be for the sole and specific purpose of determining compliance with Grand Canyon noise efficiency criteria.

#### **NPS Air Operations**

GCNP has one of the most strictly regulated aviation programs within the NPS and the DOI. The park limits use of its contracted aircraft to activities involving life or health-threatening emergencies, administration and/or protection of resources, and for individually approved special purpose missions. Each flight request is reviewed to ensure that it is the most efficient, economical, and effective method of performing the required task consistent with NPS and GCNP goals. These goals include the protection

of natural quiet and experience, as reinforced by the park's recently approved General Management Plan. The NPS is revising its contract requirements so that it can contract for quieter aircraft that meet mission requirements, and it is addressing this in budget formulation as a high priority need. The NPS will, to the maximum extent possible, meet or exceed phase-out schedules for the air tour industry at large and will to the maximum extent feasible honor flight-free zones established for the Park. GCNP seeks to make this conversion in advance of the requirements of this rule.

#### **Development of a Comprehensive Noise Management Plan**

This proposed rule reflects the understanding of the FAA and NPS that the conversion of the commercial sightseeing aircraft fleet operating in the SFRA to a more noise efficient fleet is the most promising approach to providing for the substantial restoration of natural quiet mandated by Pub. L. 100-91 and allowing for some measure of growth in the commercial sightseeing industry. To ensure that the proposed rule provides the fairest solution for all parties involved, the FAA and NPS are committed to the joint development of a noise management plan no later than 5 years from May 1, 1997. It will provide for a more adaptive management system, full resolution of all monitoring and modeling issues, improved public input, and the provision of improved incentives to invest in noise efficient aircraft. The purpose is to further refine the final rule published



concurrently with this proposed rule, whose intent is to provide for the substantial restoration of natural quiet mandated by the Overflights Act. To ensure development of a flexible and adaptive approach to noise mitigation and management, this plan will, at a minimum, 1) address development of a reliable aircraft operations and noise database, 2) validate and document the most effective uses for FAA and NPS noise models in GCNP, 3) explore how the conversion to a noise efficient fleet can most effectively contribute to the substantial restoration of natural quiet while allowing for growth in the industry, and how, in this context, incentives can best be provided to promote this conversion. The FAA and the NPS are committed to an open process that will provide for full public involvement.

In the development of the Comprehensive Noise Management Plan, consideration will be given to the inclusion of additional reporting requirements. The final rule published elsewhere in this part of this issue of the Federal Register does not require that operators report on their commercial sightseeing operations and aircraft used with the SFRA beyond the year 2002. Some type of additional information after that time will be required. The FAA is requesting comments on the type of information and the method of collecting that information that would be most consistent with this plan. Comments will be considered during the development of the Comprehensive Noise Management Plan.

### **Potential Further Action**

As proposed, the FAA would remove the temporary cap placed on certain aircraft permitted to be used for commercial sightseeing operations in GCNP. This is in response to the cap established by the companion final rule published elsewhere in this part in this issue of the Federal Register.

The proposed rule would permit operators conducting commercial sightseeing operations within the SFRA to replace GCNP Category A aircraft with GCNP Category B aircraft until December 31, 2000. According to the proposed requirements of the phase-out, the GCNP Category B aircraft could be used until December 31, 2008. Furthermore, the proposed rule allows the substitution of GCNP Category B aircraft with other GCNP Category B aircraft until December 31, 2008. In this context, should operators be restricted to replacing either GCNP Category A and B aircraft only with GCNP Category C aircraft?

As proposed in this notice, the removal of the cap would enable the fleet size to grow. Fleet conversion to larger and quieter aircraft provides for industry growth and noise reduction. But since there is ultimately some capacity level that is consistent with the substantial restoration of natural quiet, which the FAA and NPS will

address in the development of a Comprehensive Noise Management Plan, the FAA is requesting specific comment on how to address this "capacity" issue:

-Should an overall cap on the fleet size be maintained until the Comprehensive Noise Management Plan is completed? Or should the number of Category C aircraft in the fleet be allowed to grow through random addition until it reaches the size recommended in the Comprehensive Noise Management Plan to be in concert with one that will maintain the substantial restoration of natural quiet in GCNP?

-At what size should the fleet be capped? What is the appropriate baseline to establish for imposition of a fleet cap? And if imposed, what would the effect be on transitioning to noise efficient aircraft? What provisions should be made for changes in technology that result in increased aircraft efficiency and sound reduction?

-Should incentives be included in a "flexible" cap that would permit increasing numbers of aircraft based on acquisition of leading edge noise efficient technology by operators? Should growth be tied to an incentive

system for existing operators to convert their fleet to more noise efficient aircraft? For example, an operator converting two GCNP Category A aircraft to GCNP Category C aircraft could add an additional GCNP Category C aircraft, for a total of three GCNP Category C aircraft. And an operator converting three GCNP Category B aircraft would be permitted to add one additional GCNP Category C aircraft, for a total of four GCNP Category C aircraft.

-Should caps be applied more selectively to specific routes or corridors that are more noise-sensitive, such as the Dragon Corridor?

The FAA is specifically requesting comments on how to better protect areas adjacent to the Dragon Corridor, identified by the NPS as among the most noise-sensitive areas in GCNP. To minimize the amount of noise from commercial sightseeing aircraft in the Dragon Corridor, the FAA solicits comments on the following alternatives:

- Removing the two-way loop permitted for helicopters in the Dragon Corridor and reinstating the two-way loop in the Zuni Corridor.

- Accelerating the proposed phase-out schedule for aircraft operating in the Dragon Corridor.
- Permitting only GCNP Category C aircraft to operate in two directions within the Dragon Corridor.

### **Environmental Review**

The FAA has prepared a draft environmental assessment (EA) for this proposed action to assure conformance with the National Environmental Policy Act of 1969. A copy of this draft EA will be circulated to interested parties and placed in the docket, where it will be available for review. For those unable to view the document in the docket, the Draft EA can be obtained from the person listed in the "For Further Information Contact" section listed previously. The comment period on the Draft EA will remain open for 90 days from the date of the publication of this Notice. Before the final rule is issued, the FAA will prepare a Final EA and determine whether a Finding of No Significant Impact may be issued or an environmental impact statement is required.

### **Regulatory Evaluation Summary**

Changes to federal regulations must undergo several economic analyses. First, Executive Order 12866 directs Federal agencies to promulgate new regulations or modify existing regulations only if the potential benefits to society

justify the costs. Based on the criteria outlined in E.O. 12866, the Department of Transportation has concluded that this rulemaking would constitute a "significant regulatory action" and, as such, must include an analysis of alternative actions. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Finally, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade.

In conducting these assessments, the FAA has determined that the combined quantifiable and non-quantifiable benefits of the proposed rule would exceed costs. The FAA has also determined that the rule would not have any significant impact on international trade. In addition, the FAA has estimated that the rule would have a significant economic impact on a substantial number of small air tour operators. Therefore, a regulatory impact analysis is included as required by law. These analyses, available in the docket, are summarized below.

### Introduction

This regulatory evaluation analyzes the costs and benefits of the proposed rulemaking to establish noise limitations for certain aircraft operations over the Grand Canyon

National Park (GCNP). The FAA is proposing these limitations to reduce the impact of aircraft noise on the park environment and to assist the National Park Service in achieving its statutory mandate imposed by Public Law 100-91. P.L. 100-91 mandates for the substantial restoration of natural quiet and experience in GCNP. Responding to the law, this proposal would assure the achievement of that mandate through a combination of requirements that would limit the future use of noisier aircraft and provide incentives for the use of quieter aircraft. This NPRM is issued concurrently with a final rule which codifies and revises the provisions of Special Federal Aviation Regulation (SFAR) No. 50-2, Special Flight Rules in the Vicinity of Grand Canyon National Park.

#### Costs

The FAA estimates that the undiscounted cost of the proposed rule to be \$172.6 million, with a present value of \$96.7 million. This cost estimate was calculated for the 12-year period, 1997 to 2008, and would be incurred by operators conducting airtour operations at the GCNP. Most of this cost would result from operators having to ultimately replace their Category A and B aircraft with Category C aircraft. Each of the cost categories are described below. The assumptions used to calculate the

costs are explained in detail in the full regulatory evaluation.<sup>2</sup>

The FAA has identified five cost components in the NRPM. These components and their respective costs are explained below.

#### Cost of Certifying Noise Efficiency

Four aircraft--CE-180, CE-206, PA-28-180, and BHT-206-B--predate the noise standard and, therefore, do not have certificated noise levels. To obtain a noise level to use to compare with the GCNP noise efficiency limit, either a computational analysis or a measurement test is required. The estimated costs for this are \$18,750 for each aircraft type, and would occur in 1997, so the total cost would be \$75,000 (net present value, \$70,000).<sup>3</sup>

#### Cost of Phase-Out

Another cost of the NPRM is the eventual phase-out of Category A and Category B aircraft and replacement with Category C aircraft. Specifically, the cost represents the

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<sup>2</sup> As required by the Office of Management and Budget (OMB), the present value of this stream was calculated using a discount factor of 7 percent. All dollar values are expressed in 1995 dollars.

<sup>3</sup> While it is possible in the future that another aircraft would be introduced into the GCNP that does not have a certified noise level, such a situation is impossible to predict. All Category B and C aircraft that this analysis assumes airtour operators would convert to have certified noise levels, so no additional costs are anticipated in the future for this cost component.



difference in value of existing aircraft and their replacements and the additional or differential expenses associated with operating the quieter aircraft.

**Phase-Out of Category A for Category B Aircraft:** The aircraft value differential was calculated by subtracting the value of Category A aircraft from the value of Category B aircraft. The operating cost differentials were similarly calculated and added over the period 1997 to 2000. These aircraft would subsequently need to be replaced by Category C aircraft between 2001 and 2008. The analysis assumes that each existing Category A aircraft would be replaced by a PA-31-350 by 2000, which would then be replaced by a Caravan by 2008. The cost of phasing out Category A for Category B aircraft (and subsequently for Category C aircraft) is \$74 million, with a present value of \$42 million.

The FAA considered the option of requiring phased-out Category A aircraft to be replaced directly with Category C aircraft instead of allowing operators to temporarily replace Category A aircraft with Category B aircraft. This option was rejected because requiring direct conversion to more expensive Category C aircraft would place a major economic burden on many small business operators during the first four years of the phase-out (1997-2000). The FAA

timates that \$72 million more in costs would occur in this period as a result of this option than if transition to Category B was allowed. Some operators may choose to convert directly from Category A to Category C aircraft since it must be done by 2008 anyway, but allowing the flexibility to convert from A to B to Category C provides economic relief to those operators who need it most by allowing them to spread costs over a much longer period and generate additional revenues to offset these costs. Direct conversion from Category A to Category C results in some small earlier noise reductions in the Park, but both approaches lead to the same benefits by the year 2008.

**Phase-Out of Category B for Category C Aircraft:** The aircraft value differential was calculated by subtracting the value of Category B aircraft from the value of Category C aircraft. (See full regulatory evaluation for list of aircraft.) The operating cost differentials were similarly calculated and added over the period 2001 to 2008. The cost of phasing out Category B for Category C aircraft by 2008 is \$62 million, with a present value of \$34 million.

**Cost of Non-Addition For Category A Aircraft**

This non-addition cost is the cost associated with prohibiting additions of Category A aircraft that would

otherwise occur in the absence of the proposed rule. It is the cost differential between the price of Category B or C aircraft and Category A aircraft. From 1997 to 2000, all Category A aircraft would need to be converted to Category B aircraft. Thereafter, all Category A aircraft would have to become Category C aircraft. Twelve-year costs sum to \$22 million with a present value of \$12 million.

#### Cost of Non-Addition For Category B Aircraft

Similarly, non-addition cost for Category B aircraft is the cost associated with prohibiting Category B additions except for replacement of Category A aircraft. It is the cost differential between the price of Category B aircraft and a Category C aircraft had this proposed rule not been in place. This analysis makes the same aircraft substitutions that are shown in the table above in the section on "Phase-Out of Category B for Category C Aircraft." Total 12-year costs equal \$14 million with a present value of \$9 million.

#### Benefits

The benefits of noise reduction attributable to this rulemaking can be broadly categorized as use and non-use benefits. Use benefits are the benefits perceived by individuals from the direct use of a resource such as hiking, rafting, or sightseeing. Non-use benefits are the

benefits perceived by individuals from merely knowing that a resource is preserved in a given state. For example, GCNP clearly has value to people who have not visited the park, but take pleasure from the knowledge of its existence. It also has value to people who may wish to visit the Park at some future date. The non-use benefits attributable to this rulemaking have not been estimated but are described qualitatively. The use benefits of this rulemaking have been estimated and are presented below.

The Final Rule revising SFAR 50-2 contains certain overflight restrictions. The benefits of those restrictions have been estimated and are reported in the Final Rule. The NPRM would further amend SFAR 50-2 and the additional benefits are estimated here. The same methodology and some of the same data used to estimate benefits for the Final Rule are also used to estimate benefits in the NPRM.

Economic studies have not been conducted specifically to estimate benefits for the NPRM. Benefits are, therefore, estimated for analogous situations combining value estimates from existing economic studies with site-specific information related to GCNP and other information. Certain criteria should be applied to ensure that appropriate studies are selected. Those criteria are:

- Selected economic studies must reasonably represent the resources to be valued in terms of physical characteristics, service flows, user characteristics, and available substitutes;
- Selected economic studies must be scientifically sound. Studies that are either published in a peer-reviewed academic journal or are conducted by a recognized university-associated researcher or established consulting firm are considered to be scientifically sound; and
- Selected economic studies must use appropriate valuation methodologies.

The site-specific information used in the benefits estimation includes visitation data for GCNP and a visitor survey conducted to document the visitor impacts of aircraft noise within GCNP. The available visitation data for GCNP permits the categorization of visitors into the following groups: backcountry users, river users, and other visitors. "Other visitors" includes those sightseeing, picnicking, pleasure driving, etc. National Park Service estimates for the number of visitor-days in 1995 for these visitor groups are as follows:

NUMBER OF VISITOR-DAYS IN 1995	
Visitor Group	Visitor Days
Backcountry	115,478
River	168,602
Other	5,517,720
<b>Total</b>	<b>5,801,800</b>

The GCNP visitor survey indicates that these different visitor groups are variously affected by aircraft noise (HBRS, Inc. and Harris Miller Miller & Hanson, Inc. 1993). This survey asked respondents to classify the interference of aircraft noise with their appreciation of the natural quiet of GCNP as either "not at all," "slightly," "moderately," "very much," or "extremely." The percent of visitors indicating these impacts is presented below by visitor group.

VISITORS AFFECTED BY AIRCRAFT NOISE IN GRAND CANYON NATIONAL PARK			
Impact	Backcountry Vistors <sup>a</sup>	River Visitors <sup>b</sup>	Other Visitors
Not At All	41.0%	45.5%	76.0%
Slightly	15.0%	16.5%	11.0%
Moderately	13.5%	10.0%	4.0%
Very Much	14.5%	12.5%	4.0%
Extremely	16.0%	15.5%	5.0%
<sup>a</sup> Average for Summer and Fall users			
<sup>b</sup> Average for motor and oar users			

Source: HBRIS, Inc. and Harris Miller Miller & Hanson, Inc. 1993

The economic studies selected for use in the benefit estimation are listed below. These studies value recreational activities in or near GCNP. All dollar amounts are indexed to 1995. The implicit price deflator for GDP was used to index all values (Survey of Current Business, March 1996).

VISITOR-DAY VALUES		
Activity	Study <sup>4</sup>	Consumer Surplus per Visitor-Day
Hiking in Arizona	Martin, Russell, and Smith 1974	\$43.16
Multi-Day Rafting in Grand Canyon Natl Park	Boyle, Welsh, and Bishop 1988	\$128.21
Sightseeing in Bryce Canyon Natl Park	Haspel and Johnson 1982	\$39.71

Consumer surplus is the difference between the maximum amount a consumer is willing to pay and what the consumer actually pays. It is a measure of the increase in well-being gained by individuals through participation in recreational activities.

It was assumed that these visitor-day values represent the value of participating in the indicated activities at GCNP absent any impacts from aircraft noise. It should be noted that these values potentially understate the value of

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<sup>4</sup> Reported in Walsh, Johnson, and McKean 1988



participation absent any impacts from aircraft noise to the extent that they were estimated in conditions where aircraft noise was present.

There is no economic study available that estimates the reduction in the value of participation that is attributable to the "slightly," "moderately," "very much," or "extremely" impacts described in the GCNP visitor survey. Therefore, the following reductions were assumed. The results of a sensitivity analysis using lower percentage reductions are reported below.

Assumed Reductions in Visitor-Day Values	
Impact	Reduction
Slightly	20%
Moderately	40%
Very Much	60%
Extremely	80%

The total lost value for each category was calculated as the product of the number of visitor-days, the proportion of visitors affected by aircraft noise, the visitor-day value,

and the assumed proportional reduction in the visitor-day value. For example the total lost value for river users that were moderately affected is the product of the number of river visitor-days (168,602), the proportion of river users that were moderately affected by aircraft noise (10.0 percent), the visitor-day value for river use (\$128.21), and the assumed reduction in the visitor-day value given a moderate impact (40 percent).

Based on the number of visitors to the park in each use category, these data and assumptions imply the following total lost values from all aircraft noise in 1995 as noted in the table below. Approximately 58 percent of these benefits were estimated to be obtained by the final rule revising SFAR 50-2. That leaves approximately 42 percent of the total available for this NPRM.

TOTAL LOST VALUE FROM ALL AIRCRAFT NOISE IN 1995				
Impact	Backcountry Visitors	River Visitors	Other Visitors	Total
Slightly	\$149,509	\$716,677	\$4,819,884	\$5,686,070
Moderately	\$269,116	\$868,700	\$3,505,370	\$4,643,186
Very Much	\$433,576	\$1,628,812	\$5,258,055	\$7,320,443
Extremely	\$637,905	\$2,692,969	\$8,763,425	\$12,094,299
<b>Total</b>				<b>\$29,743,998</b>

The benefit of the proposed rule is that portion of the total lost value that is associated with the resulting noise reduction. Aircraft noise modeling has produced a measures called  $L_{eq12}$ , which is a non-linear form. Determining a linear measurement of noise reduction weighted by ground area over different levels requires calculation of the antilog of the contour levels. This process produces an estimated sound energy level that can be compared linearly over varying ground areas. The noise reduction results for this NPRM are presented below.

Average linearized noise measure, weighted by the square miles over which different levels, are predicted to occur according to the following schedule:

Year	No NPRM	With NPRM	Noise Reduction
1997	1,268.33	1,277.70	-0.74%
2000	1,268.33	1,087.83	14.23%
2008	1,268.33	685.96	45.92%

The 45.92% noise reduction by the year 2008 corresponds to the finding in the environmental assessment of this proposed rule that 57.4 percent of the GCNP area will have achieved natural quiet as defined by NPS.

The indicated reduction in aircraft noise for each year was applied to the total lost value from all aircraft noise. Subtracted from that application is the amount applied as estimated benefits for the final rulemaking revising SFAR 50-2. That product yields the current use benefit for that year.

Linear interpolation was used to estimate benefits between the years 1997 to 2000, and 2000 to 2008. A 3 percent discount rate was then applied to calculate the present value of use benefits over the ten year regulatory evaluation period. The economics literature supports a 3 percent discount rate for natural resource valuation (e.g., Freeman 1993). Recent Federal rulemakings also support a 3

percent discount rate for natural resource valuation (61 FR 453; 61 FR 20584). The total indicated benefits represent approximately 22 percent of the total benefits available. The resulting use benefit estimates are presented in the following table.

INDICATED USE BENEFITS OF THE OVERFLIGHT NPRM		
Year	Current Value	Present Value
1997	\$ (106,234)	\$ (103,140)
1998	\$598,389	\$564,039
1999	\$1,279,091	\$1,170,549
2000	\$1,869,864	\$1,661,350
2001	\$2,324,027	\$2,004,726
2002	\$2,749,363	\$2,302,548
2003	\$3,145,872	\$2,557,881
2004	\$3,513,553	\$2,773,632
2005	\$3,852,408	\$2,952,550
2006	\$4,162,436	\$3,097,244
2007	\$4,443,637	\$3,210,178
2008	\$4,696,011	\$3,293,688
<b>Total</b>		<b>\$25,485,244</b>

It is important to recognize significant uncertainties in this estimation. One uncertainty relates to the percentage reductions in visitor-day values that can be attributed to aircraft noise. It was assumed above that there is a 20 percent reduction for visitors affected "slightly," a 40 percent reduction for visitors affected "moderately," a 60 percent reduction for visitors affected "very much," and an 80 percent reduction for visitors affected "extremely." In recognition of the uncertainty surrounding this assumption, one-half of these percentage reductions were used to calculate an alternative benefit estimate. Additionally, in recognition of the discount rate recommended in OMB Circular A-94, alternative benefit estimates were calculated using a 7 percent discount rate. These alternative benefit estimates are presented below.

Alternative Use Benefits  
Attributable to this NPRM  
(Present value, 12 years)

Visitor Day Value		
Reduction Assumption		
(Slightly, Moderately,	-----Discount Rate-----	
<u>Very Much, Extremely)</u>	<u>3 percent</u>	<u>7 percent</u>
20, 40, 60, 80	\$25,485,000	\$18,795,000
10, 20, 30, 40	\$12,979,473	\$ 9,572,011

The FAA and the NPS believe that the true representation of benefits from the proposed rule are reflected by the three percent discount rate and the visitor day value reduction of 20%, 40%, 60%, 80% with the resulting value of 25,485,000, and that value is used to represent the use benefits of this proposal.

In addition to these use benefits, this rulemaking would likely generate non-use benefits. Although the FAA and the NPS have not attempted to estimate the magnitude of these benefits, non-use benefits have been documented and estimated in the general proximity of the Grand Canyon. In a study relating to the operation of Glen Canyon Dam (Hagler

Bailly Consulting 1995), annual non-use benefits in a range from \$2,286.4 million to \$3,442.2 million were estimated based on a national survey. No attempt has been made to relate these non-use benefit estimates to the potential non-use benefits of aircraft noise reduction that would occur as a result of this proposal. However, these estimates do suggest that potentially significant non-use benefits can be attributed to this proposed rulemaking.

#### ***NATIONAL CANYON CORRIDOR***

The GCNP Final Rule, which is being simultaneously promulgated with this proposal, will expand one of the park's flight free zones and eliminate the Blue 1 route. The NPRM would reopen that route (redesignated as Blue 1A) to airtour operators, provided they use Category C aircraft.

The FAA estimates that the revenues potentially lost from eliminating the old Blue 1 route, and included as an average cost of \$2.3 million per year in the GCNP Final Rule, would be increasingly recovered throughout the period 1997-2008 as a result of the proposal as operators phase out Categories A and B aircraft and replace them with Category C aircraft.<sup>5</sup> In 1997, the FAA estimates that about 28 percent of the

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<sup>5</sup> See Notice of Availability of Proposed Air Tour Routes published in the Federal Register with this NPRM.



flights between Las Vegas and Tusayan would be conducted using Category C aircraft and would, therefore, use the new Blue 1A route. The remaining air tour flights between Las Vegas and Tusayan would not include a flight through the Blue 1A route and would have a reduced fare. This percentage would increase each year as Categories A and B aircraft are phased out. By 2001 approximately half of the flights between Las Vegas and Tusayan will be conducted using Category C aircraft, and therefore, fly the Blue 1A route. By 2008, the proposed deadline for complete phase out for Categories A and B aircraft, all flights would be conducted using Category C aircraft.

REDUCTION IN REVENUE LOSS		
Year	Current Value	Present Value
1997	\$566,259	\$529,214
1998	\$663,459	\$579,491
1999	\$754,727	\$616,082
2000	\$778,156	\$593,651
2001	\$1,180,220	\$841,480
2002	\$1,616,147	\$1,076,907
2003	\$1,987,803	\$1,237,904
2004	\$2,365,380	\$1,376,673
2005	\$2,447,181	\$1,331,104
2006	\$2,532,784	\$1,287,539
2007	\$2,757,791	\$1,310,207
2008	\$2,848,798	\$1,264,900
Totals	\$20,498,704	\$12,045,152

The FAA estimates that the recovered lost revenue (net of variable operating costs) attributable to the proposed rule would increase from \$556,000 in 1997 to \$2.8 million in 2008. The current values and seven percent discounted values are shown in the table above.

The FAA estimated natural resource benefits, discounted at three percent, for the 12-year period 1997-2008 to be \$25.5 million. The FAA also estimated non-resource benefits (increased airtour operator profits), discounted at seven percent, for the 12-year period to be \$12.0 million. The combined total benefit of this proposal, therefore, is estimated to be \$37.5 million.

#### Summary of Costs and Benefits

The total quantified costs of this proposal to establish noise limitations for certain aircraft operated in the vicinity of the GCNP are estimated to be \$172.6 million undiscounted or \$96.7 million discounted to present value.

The quantified benefits, including noise reduction and use of the Blue 1A scenic route, are estimated to be \$47.4 million undiscounted and \$37.5 million discounted to present value. In addition to quantified benefits, there are substantial unquantified benefits as discussed above.

However, estimates of costs and benefits of the proposal were made primarily as an aid in evaluating the economic impacts of a phase-out that the FAA believes is necessary to obtain substantial reductions in aircraft noise in GCNP. The benefits justifying the restoration of natural quiet to

the park have already been established by the American public, and that determination was carried out by their elected representatives in enactment of the law directing that natural quiet be restored. Based on that direction and the quantified and unquantified costs and benefits contained in this analysis, the FAA finds this proposal to be cost beneficial.

### Alternatives

As explained in the Introduction of this regulatory evaluation, the proposed rule has been deemed "significant" due to its high cost and the impact it would have on small entities. As a result, the FAA has identified and considered alternatives to the proposed rule. Alternative 1 is the proposed rule. Alternative 2 is to not undertake rulemaking at this time beyond the final rule being implemented simultaneously with this proposal. Alternative 3 is the same as Alternative 1, but with no interim phase-out of Category B aircraft. Operators would presumably hold on to their aircraft until the last minute and replace them at the end of 2000 or 2008 depending on what type of aircraft they had.

### Cost of Alternatives

A side-by-side cost comparison of Alternatives 1 and 3 is presented in the table below. Alternative 2 would have no cost and is therefore not included. Alternatives 1 and 3 have the same total cost because the same type and number of aircraft would be replaced under both alternatives.

However, operators would have a longer time in which to comply under Alternative 3 than under Alternative 1.

Therefore, the present value of the cost of that compliance would be less.

COST COMPARISON OF ALTERNATIVES 1 AND 3				
	Alternative 1		Alternative 3	
Cost Categories	Total Cost	Present Value	Total Cost	Present Value
Certified Noise Efficiency Level	\$0.08	\$0.07	\$0.08	0.07
Phase Out Category A to B	\$74.33	\$42.06	\$74.33	33.99
Phase Out Category B to C	\$60.92	\$33.49	\$60.92	27.05
Non-Addition Category A	\$21.76	\$11.87	\$21.76	9.68
Non-Addition Category B	\$14.07	\$8.42	\$14.07	7.07
	\$171.17	\$95.91	\$171.17	\$77.86

#### Benefits of Alternatives

The benefits of Alternative 1 have already been estimated in the Benefits section above. There are no benefits to Alternative 2 since it merely maintains the status quo.

Alternative 3 would require the same conversion as that required in alternative 1, except the phase-out would not be required. As with the cost analysis, this benefits analysis assumes that all operators of Category A aircraft would wait until the year 2000 to convert their aircraft to Category B. Also, it is assumed that operators would wait until the year 2008 to convert their Category B aircraft to Category C aircraft because there would be no mandatory phase-out of Category B aircraft before 2008.

As with Alternative 1, the indicated reduction in aircraft noise for each year was applied to the total lost value from all aircraft noise. However, the indicated reduction remained constant at -0.74 percent from 1997 to 2000 and 14.23 percent from the years 2000 to 2008. In the year 2008, it is assumed the noise reduction reaches the indicated 45.92 percent. Subtracted from the application is the amount applied as estimated benefits for the final rule making revising SFAR 50-2. That product yields the current use benefit for that year. The annual current use benefits are presented in the following table two tables.

# ALTERNATIVE 3

## INDICATED USE BENEFITS OF THE OVERFLIGHT NPRM

Year	Current Value	Present Value 3 percent
1997	\$ (106,234)	\$ (103,140)
1998	\$ (103,931)	\$ (97,965)
1999	\$ (102,204)	\$ (93,531)
2000	\$ 1,869,864	\$ 1,661,350
2001	\$ 1,818,071	\$ 1,568,284
2002	\$ 1,766,278	\$ 1,479,230
2003	\$ 1,714,486	\$ 1,394,034
2004	\$ 1,662,693	\$ 1,312,545
2005	\$ 1,610,901	\$ 1,234,621
2006	\$ 1,559,108	\$ 1,160,123
2007	\$ 1,507,315	\$ 1,088,917
2008	\$ 4,696,011	\$ 3,293,688
Total		\$ 13,898,156

The benefits of restoring the Blue 1A route for Alternatives 1, 2, and 3 are the same. As discussed above in the Benefits section, the benefits of implementing this route are \$12 million over the 12-year period. When combined with the \$13.9 million natural-resource benefits, the total present value benefits of Alternative 3 would be \$25.9 million.



The following table compares the costs and benefits of the three proposals. The FAA has rejected Alternative 2 because it relies solely on the final rule issued concurrently with this NPFM to achieve the substantial restoration of natural quiet mandated by Congress. The NPS's definition of substantial restoration is the situation in which 50 percent or more of the Park is free of aircraft noise at least 75 percent of the time. Based on noise estimates contained in the environmental assessment associated with this proposal, the final rule would only marginally achieve these goals in 1997, and would begin to fall below the goal as activity increases in the future. The FAA believes that substantial further reductions in aircraft noise could be achieved by taking advantage of the advanced technology incorporated into quieter aircraft now available. Therefore, the agency rejects Alternative 2 in favor of one that is estimated to meet or exceed NPS standards for the immediate future.

The FAA has rejected Alternative 3 because, while similar to the proposal, it would impose no phase-out schedule for Category B aircraft beyond the requirement that they discontinue operations by December 31, 2008. Imposing no phase-out schedule was considered as a way to provide operators more flexibility in transitioning from Category B

to Category C aircraft. A cost analysis of this alternative, based on the assumption that operators would delay phasing out Category B aircraft as long as possible, indicated that there would be a cost savings to operators only in that investment in some Category C aircraft would be delayed. On the other hand, the benefits of less aircraft noise in the Park would also be less during the transition period. Further, if operators actually did delay the phase-out until the last year, they would probably not be able to find suitable replacement aircraft or would have some other reason for requesting an extension of time. The FAA's experience in other rulemaking actions requiring a transition is that most operators do not wait until the deadline. Instead, they develop their own transition schedules. Based on the above, the FAA decided that establishing a transition schedule as contained in the proposal would provide for a phase-out that will assure early benefits and can be effectively monitored. Therefore, the Agency rejects Alternative 3.

ALTERNATIVES COSTS AND BENEFITS COMPARISON			
(millions)			
	Present Value Costs	Present Value Benefits	Benefit/Cost Ratio
Alternative 1	\$95.91	\$37.5	.39

Alternative 2	\$0.0	\$0.0	N/A
Alternative 3	\$77.86	\$25.9	.33

### Initial Regulatory Flexibility Analysis

By both law and executive order, Federal regulatory agencies are required to consider the impact of proposed regulations on small entities. Executive Order 12866 "Regulatory Planning and Review", dated September 30, 1993, states that:

Each agency shall tailor its regulations to impose the least burden on society, including individuals, businesses of different sizes, and other entities (including small communities and governmental entities), consistent with obtaining the regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations.

The 1980 "Regulatory Flexibility Act" (RFA) requires Federal agencies to prepare an initial regulatory flexibility analysis of any notice of proposed rulemaking that will have a significant economic impact on a substantial number of small entities. The definition of small entities and guidance material for making determinations required by the

RFA are contained in the Federal Register [47 FR 32825, July 29, 1982]. Federal Aviation Administration (FAA) order 2100.14A outlines the agency's procedures and criteria for implementing the RFA.

With respect to this proposed rule, a 'small entity' is a commercial sightseeing operator that for all practical purposes owns or operates nine or fewer aircraft. A significant economic impact on a small entity is defined as an annualized net compliance cost to such a small commercial sightseeing operator. In the case of scheduled operators of aircraft for hire having less than 60 passenger seats, a "significant economic impact" or cost threshold, is defined as an annualized net compliance cost level that exceeds \$69,800; for unscheduled operators the threshold is \$4,900. A substantial number of small entities is defined as a number that is more than one-third of the small commercial sightseeing operators (but not less than eleven operators) subject to the proposed rule.

The Federal Aviation Administration has determined that this proposal could have a significant economic impact on all commercial sightseeing operators conducting flights within Grand Canyon National Park and therefore has prepared this initial regulatory flexibility analysis. The analysis,

structured in accordance with section 603 of the RFA,  
requires the following:

1. Why FAA action is being considered
2. Statement of the objectives and legal basis for the proposed rule
3. Description of and estimated number of small entities affected
4. Projected reporting, recordkeeping, and other compliance requirements of the proposed rule
5. Any relevant Federal rules which may duplicate, overlap or conflict with the proposed rule

Why FAA Action is Being Considered: The proposal to establish noise limitations for certain aircraft operations in the vicinity of the Grand Canyon National Park stems from the need to further reduce the impact of aircraft noise on the park environment and assist the National Park Service in achieving its statutory mandate imposed by Public Law 100-91 to provide for the substantial restoration of natural quiet and experience in the Grand Canyon National Park.

Statement of the Objectives and Legal Basis for the Proposed

Rule: In 1987, Congress enacted Public Law (Pub. L.) 100-91, commonly known as the National Parks Overflights Act (the Act). The Act stated, in part, that noise associated with aircraft overflights at GCNP was causing a "significant adverse effect on the natural quiet and experience of the park and current aircraft operations at the Grand Canyon National Park have raised serious concerns regarding public safety, including concerns regarding the safety of park users."

Pub. L. 100-91 requires the Department of the Interior to submit to the FAA recommendations to protect resources in the Grand Canyon from adverse impacts associated with aircraft overflights. The law mandated that the recommendations: 1) provide for substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflights; 2) with limited exceptions, prohibit the flight of aircraft below the rim of the canyon; and 3) designate flight-free zones except for purposes of administration and emergency operations. In December of 1987, the DOT transmitted its "Grand Canyon Aircraft

Management recommendations" to the FAA, which included both rulemaking and nonrulemaking actions.

On May 27, 1988, the FAA issued SFAR No. 50-2 revising the procedures for operation of aircraft in airspace above the Grand Canyon (53 FR 20264, June 2, 1988). The SFAR, among other things, limited the areas for aircraft operations by establishing special flight routes for commercial operators. Since that time, a substantial amount of public debate has taken place regarding the effect of aircraft noise on the Grand Canyon's environment. The debate and the objective of the proposal is more thoroughly discussed in the preamble of this proposed rulemaking.

On June 15, 1995, the FAA published a final rule that extended the provisions of SFAR No. 50-2 to June 15, 1997 (60 FR 31608). This action allowed the FAA sufficient time to review thoroughly the NPS recommendations as to their impact on the safety of air traffic over GCNP, and to initiate and complete any appropriate rulemaking action.

On September 16-20, 1996, in Scottsdale, Arizona, and Las Vegas, Nevada, the FAA held public meetings to obtain additional comment on the NPRM. entitled "Special Flight Rules in the Vicinity of Grand Canyon National Park," and on

the draft environmental assessment that accompanied that proposal. Comments and the transcripts of these meetings have been placed in rulemaking docket No. 28537 for Notice 96-11.

Description and Estimated Number of Small Entities Affected:

The proposed rulemaking will affect commercial sightseeing operators conducting flights over the Grand Canyon National Park under 14 CFR part 135. These commercial operators provide sightseeing tours of the Grand Canyon over the four flight zones established by SFAR 50-2. FAA data shows that in 1995, there were 26 potentially affected small commercial sightseeing operators, each owning, but not necessarily operating 9 or fewer aircraft. These operators owned a total of 70 aircraft and the average fleet consisted of about 3 airplanes. The FAA estimates that 26 operators, which are also small entities, will be impacted by the proposed rule.

Projected Reporting, Recordkeeping, and Other Compliance

Requirements of the Proposed Rule: The proposal would not require affected small commercial sightseeing operators to maintain and report additional information.



The proposed rule would require that operators phaseout noisier aircraft. The proposed rule would allow B category aircraft to replace phased out A category aircraft.

Any Relevant Federal Rules Which May Duplicate, Overlap or Conflict with the Proposed Rule: There are no relevant Federal rules which will duplicate, overlap or conflict with the proposed rule.

#### Cost of Compliance to Small Entities

The FAA has determined that four aircraft models currently operating in GCNP predate FAA noise standards and therefore do not have certificated noise levels. To obtain a level to use to compare with the Grand Canyon National Park noise efficiency limit may require analysis or a measurement test. Only four aircraft total operating at the Grand Canyon National Park (CE 180, CE 206, PA-28-180, and BHT-206-B), do not have certificated noise levels. The cost per analysis or test is \$18,750 or \$2670 annualized at 7 percent over 10 years. In no situation would a substantial number of small operators be significantly impacted because the annualized cost is below even the lowest threshold for unscheduled operators and no operator owns more than one of these aircraft.

To calculate the annualized cost impact on a small operator of the phaseout schedule, the FAA in the regulatory evaluation determined the cost impact on by aircraft type. That is, given the fleet mix of a particular operator, the FAA calculated the cost of replacing a given noncompliant aircraft with a compliant one. The incremental annualized fixed and variable costs of replacing noncompliant aircraft with compliant aircraft is shown in the following table.

The FAA has determined that, after multiplying the annualized incremental cost per aircraft type by the number of aircraft that operators currently owns/or operates, 23 small entities would be significantly impacted under the guidelines outlined earlier. Therefore, a substantial number of operators affected by this proposed requirement (which is more than one-third of all GCNP commercial sightseeing operators) would incur a significant cost impact (See table in full regulatory evaluation.).

### Description of Alternative Actions

Section 603(c) of the RFA requires that each initial regulatory flexibility analysis contain a description of any feasible alternatives to the proposed rule that would accomplish the stated objectives of applicable statutes and that minimizes any significant economic impact of the proposed rule on small entities.

The FAA and the NPS have made extensive efforts, including the public meeting at Flagstaff, to determine the optimal action to reduce aircraft noise and provide for the substantial restoration of natural quiet in the GCNP. In addition to this proposed rule's phaseout of operations of certain types of aircraft, the FAA and the NPS considered two other alternatives, described below.

### Alternative Two

Under this alternative, the FAA would not issue an NPRM phasing out noisier aircraft at this time. Instead, the FAA would adopt an approach that would "wait-and-see" the extent to which promulgation of part 93, subpart U--Special Flight Rules in the Vicinity of Grand Canyon National Park, AZ, would reduce aircraft noise and provide for substantial restoration of natural quiet in the GCNP. Promulgation of

part 93, subpart U, issued concurrently with this NPRM, will reduce aircraft noise in the park by establishing new and modifying existing flight-free zones and enlarging the Special Flight Rules Area.

Quieter, generally larger, aircraft are available, however, that would restore more of the natural quiet in the park. Based on an extensive review of all current information available, the FAA has concluded that the use of these quieter aircraft is necessary to reducing noise substantially more toward natural quiet, and that initiating a phase-out of noisier aircraft immediately will significantly contribute to achieving natural quiet goals. Therefore, the FAA rejects this alternative.

### Alternative Three

Under this alternative, category A aircraft would be banned after December 31, 2000, and Category B aircraft would be banned after December 31, 2008, just as in the proposal, but an interim compliance schedule would not be implemented to phase out Category B aircraft between 2001 and 2008. Although operators of Category B aircraft could replace their aircraft with Category C aircraft before the end of 2008, there would be no requirement to do so.

This alternative could postpone a further reduction in aircraft noise and postpone restoration of the natural quiet in the park during the period 2001-2008. Therefore, the FAA rejects this alternative.

#### International Trade Impact Assessment

The FAA has determined that the proposed rulemaking will not affect non-U.S. operators of foreign aircraft operating outside the United States or U.S. trade. It could however, have an impact on commercial sightseeing at GCNP, much of which is foreign.

The United States Air Tour Association estimates that 60 percent of all commercial sightseeing tourists in the United States are foreign. The Las Vegas FSDO, however, believes this estimate to be considerably higher at GCNP, perhaps as high as 90 percent. The FAA cannot put a dollar value on the portion of the potential loss in commercial sightseeing revenue associated with the loss of foreign tour dollars.

#### **Federalism Implications**

The regulations herein would not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various

levels of government. Therefore, in accordance with Executive Order 12866, it is determined that this rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

#### **Paperwork Reduction Act**

In accordance with the Paperwork Reduction Act of 1995 (Pub. L. 104-13), there are no requirements for information collection associated with the proposed regulation.

#### **Conclusion**

For the reasons set forth above, the FAA has determined that this proposed rule is a significant regulatory action under Executive Order 12866. In addition, the FAA certifies that this proposal would have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This proposed rule is considered significant under DOT Regulatory Policies and Procedures.

#### **List of Subjects**

##### 14 CFR Part 93

Air traffic control, Airports, Navigation (Air),  
Reporting and recordkeeping requirements.

## **The Proposed Amendment**

For the reasons set forth above, the Federal Aviation Administration proposes to amend 14 CFR part 93 as follows:

### **PART 93--SPECIAL AIR TRAFFIC RULES AND AIRPORT TRAFFIC PATTERNS**

1. The authority citation for part 93 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40103, 40106, 40109, 40113, 44502, 44514, 44701, 44719, 46301.

#### **§ 93.305 [Amended]**

2. Section 93.305 is amended by adding before the period at the end of paragraph (c) the words: "and not including the following airspace designated as the National Canyon corridor: that airspace one mile on either side of a line extending from Lat. 36°08'43" Long. 113°09'19" to Lat. 36°15'30", Long. 112°51'07" to Lat. 36°14'38", Long. 112°45'56" to Lat. 36°18'17", Long. 112°42'22" to Lat. 36°17'49", Long. 112°39'54" to Lat. 36°12'36", Long. 112°34'120" to Lat. 36°08'12", Long. 112°34'36" then back to the Blue One Direct Route at Havatagvitch Canyon Point.

3. Section 93.306 is added to read as follows:

**§ 93.306 Operation of GCNP Category C Aircraft in National Canyon Corridor.**

No person may operate an aircraft within the National Canyon Corridor within the Special Flight Rules Area unless the aircraft is a commercial sightseeing operation aircraft that meets the GCNP Category C aircraft standard, as defined in § 93.319.

**§ 93.307 [Amended]**

4. Section 93.307 is amended by adding at the end of the section after (b) (2) (iii) a new (3) to read as follows:

<sup>(b)</sup>  
"(3) GCNP Category C aircraft in the National Canyon  
Corridor. 7,500 feet MSL."

**§ 93.316 [Amended]**

5. Section 93.316 is amended by removing paragraph (b) and removing the paragraph designation "(a)" from the remaining paragraph.

6. Section 93.319 is added to read as follows:

**§ 93.319 Noise limitations for commercial sightseeing flights.**

(a) Definitions. For the purpose of this section only

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Base level for Category A aircraft means the total number of category A aircraft listed on a certificate holder's operations specifications on December 31, 1996, and for Category B aircraft means the total number of Category B aircraft listed on a certificate holder's operations specifications on December 31, 2000, for use in commercial sightseeing operations within the SFRA.

GCNP Category A aircraft means an aircraft that has not been shown to comply with the GCNP Category B or GCNP Category C noise limit in appendix B of this part.

GCNP Category B aircraft means an aircraft that has been shown to comply with the GCNP Category B noise limit in appendix B of this part, but not the GCNP Category C noise limit in appendix B of this part.

GCNP Category C aircraft means an aircraft that has been shown to comply with the GCNP Category C noise limit in appendix B of this part.

New Entrant Operator means any person that was not authorized to conduct commercial sightseeing operations within the SFRA as of December 31, 1996.

(b) GCNP Category A Aircraft. After [Effective date of final rule], no certificate holder may operate a greater number of GCNP Category A aircraft in commercial sightseeing operations within the SFRA than the number of aircraft listed on that certificate holder's operations

specifications on December 31, 1996, for use in commercial sightseeing operations within the SFRA. After December 31, 2000, no certificate holder may operate a GCNP Category A aircraft in commercial sightseeing operations within the SFRA.

(c) GCNP Category B Aircraft. (1) After [Effective date of final rule], no certificate holder may operate a greater number of GCNP Category B aircraft in commercial sightseeing operations within the SFRA than the number of aircraft listed on that certificate holder's operations specifications on December 31, 1996, for use in commercial sightseeing operations within the SFRA, unless the aircraft was added to the certificate holder's operations specifications after December 31, 1996, and on or before December 31, 2000, as a replacement for a GCNP Category A aircraft that was listed on that certificate holder's operations specifications on December 31, 1996, for use in commercial sightseeing operations within the SFRA.

(2) After December 31, 2002, no certificate holder may operate more than 75 percent of the base level number of GCNP Category B aircraft in commercial sightseeing operations within the SFRA. Calculations resulting in fractions may be rounded to permit the continued operation of the next whole number of Category B aircraft.

(3) After December 31, 2004, no certificate holder may operate more than 50 percent of the base level number of GCNP Category B aircraft. Calculations resulting in fractions may be rounded to permit the continued operation of the next whole number of Category B aircraft.

(4) After December 31, 2006, no certificate holder may operate more than 25 percent of the base level number of GCNP Category B aircraft. Calculations resulting in fractions may be rounded to permit the continued operation of the next whole number of Category B aircraft.

(5) After December 31, 2008, no certificate holder may operate a GCNP Category B aircraft in commercial sightseeing operations within the SFRA.

(d) GCNP Category C Aircraft. Except for GCNP Category B aircraft added to the certificate holder's operations specifications as a replacement aircraft as authorized in paragraph (c)(1) of this section, no certificate holder may add an aircraft to its operations specifications for use in commercial sightseeing operations within the Special Flight Rules Area unless the aircraft is a GCNP Category C aircraft.

(e) New entrant operators. After [insert effective date of final rule], no new entrant operator may conduct commercial sightseeing operations within the SFRA unless the

aircraft used in those operations is a GCNP Category C aircraft.

7. Appendix B is added to part 93 to read as follows:

**Appendix B - GCNP Aircraft Noise Limits**

This appendix contains procedures for determining GCNP aircraft noise limits for each aircraft subject to § 93.319 determined during the noise certification process as prescribed under part 36 of this chapter. Where no certificated noise level is available, an alternative measurement procedure may be approved by the Administrator.

1. GCNP Category B Noise Limit

A, For helicopters with a flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix H of 14 CFR part 36, the limit is 84 dB for helicopters having 2 or fewer passenger seats, increasing at 3 decibels per doubling of the number of passenger seats for helicopters having 3 or more passenger seats. The limit at number of passenger seats of 3 or more can be calculated by the formula:

$$EPNL_{(H-Cat. B)} = 84 + 10 \log(\# \text{ PAX seats}/2) \text{ dB}$$

J, For helicopters with a flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix J of 14 CFR part 36, the limit is 81 dB for helicopters having 2 or fewer passenger seats, increasing at

3 decibels per doubling of the number of passenger seats for helicopters having 3 or more passenger seats. The limit at number of passenger seats of 3 or more can be calculated by the formula:

$$SEL_{(J-Cat. B)} = 81 + 10 \log(\# \text{ PAX seats}/2) \text{ dB}$$

C. For propeller-driven airplanes with a measured flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix F of 14 CFR part 36 without the performance correction defined in Sec. F35.201(c), the limit is 73 dB for airplanes having 2 or fewer passenger seats, increasing at 3 decibels per doubling of the number of passenger seats for airplanes having 3 or more passenger seats. The limit at number of passenger seats of 3 or more can be calculated by the formula:

$$L_{Amax}(F-Cat. B) = 73 + 10 \log(\# \text{ PAX seats}/2) \text{ dB}$$

D. In the event that a flyover noise level is not available in accordance with Appendix F of 14 CFR part 36, the noise limit for propeller-driven airplanes with a takeoff noise level obtained in accordance with the measurement procedures prescribed in Appendix G is 78 dB for airplanes having 2 or fewer passenger seats, increasing at 3 decibels per doubling of the number of passenger seats for airplanes having 3 or more passenger seats. The limit at number of passenger seats of 3 or more can be calculated by the formula:

$$L_{Amax}(G-Cat. B) = 78 + 10\log(\# \text{ PAX seats}/2) \text{ dB}$$

#### GCNP Category C Noise Limit

A. For helicopters with a flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix H of 14 CFR part 36, the limit is 80 dB for helicopters having 2 or fewer passenger seats, increasing at 3 decibels per doubling of the number of passenger seats for helicopters having 3 or more passenger seats. The limit at number of passenger seats of 3 or more can be calculated by the formula:

$$EPNL_{(H-Cat. C)} = 80 + 10\log(\# \text{ PAX seats}/2) \text{ dB}$$

B. For helicopters with a flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix J of 14 CFR part 36, the limit is 77 dB for helicopters having 2 or fewer passenger seats, increasing at 3 decibels per doubling of the number of passenger seats for helicopters having 3 or more passenger seats. The limit at number of passenger seats of 3 or more can be calculated by the formula:

$$SEL_{(J-Cat. C)} = 77 + 10\log(\# \text{ PAX seats}/2) \text{ dB}$$

C. For propeller-driven airplanes with a measured flyover noise level obtained in accordance with the measurement procedures prescribed in Appendix F of 14 CFR part 36 without the performance correction defined in Sec.

F35.201(c), the limit is 69 dB for airplanes having 2 or fewer passenger seats, increasing at 3 decibels per doubling of the number of passenger seats for airplanes having 3 or more passenger seats. The limit at number of passenger seats of 3 or more can be calculated by the formula:

$$L_{Amax}(F-Cat. C) = 69 + 10\log(\# \text{ PAX seats}/2) \text{ dB}$$

D In the event that a flyover noise level is not available in accordance with Appendix F of 14 CFR part 36, the noise limit for propeller-driven airplanes with a takeoff noise level obtained in accordance with the measurement procedures prescribed in Appendix G is 74 dB for airplanes having 2 or fewer passenger seats, increasing at 3 decibels per doubling of the number of passenger seats for airplanes having 3 or more passenger seats. The limit at number of passenger seats of 3 or more can be calculated by the formula:

$$L_{Amax}(G-Cat. C) = 74 + 10\log(\# \text{ PAX seats}/2) \text{ dB}$$

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